NATUR CYMRU
Nature of Wales

Number/Rhif 35 • Summer/Haf 2010

- Transition towns
- Brecon Beacons
- Monitoring
- Hairstreak butterflies
- Competition winners
- Books, News, Comment...

Natur Cymru Ltd.
Maes y Ffynnon, Penrhosgarnedd,
Bangor, Gwynedd LL57 2DW, UK.

01248 387373
info@naturcymru.org.uk

Golygydd/ Editor:
James Robertson
01248 422223
naturcymru@gmail.com

Golygydd Cynorthwyol/
Assistant Editor:
Mandy Marsh
01248 387367

Rheolwr Marchnata /
Marketing Manager
Huw Jenkins
01766 541062
huw.naturcymru@btinternet.com

Tanysgrifiadau / Subscriptions:
Unigolyn / Individual:
Sieciau /Cheques: £14.00
Debyd Uniongyrchol / Direct Debit: £13.00
Sefydliad / Organisation: £25.00
Sieciau yn daladwy i /
Cheques payable to:
Natur Cymru Ltd.

Cwmni Cyfyngedig trwy Warant yw Natur Cymru Cyfyngedig, ac nid yw'n gwmni sy'n gwneud elw. Mae wedi ei gofrestru yng Nghymru a Lloegr, rhif 5636217. Nid barn Natur Cymru Cyfyngedig neu'r Golygyddion a leisir yn y cylchgrawn hwn o angenrheidrwydd.

Natur Cymru Limited is a non-profit making Company Limited by Guarantee, registered in England and Wales, no. 5636217. The views expressed in this magazine are not necessarily those of Natur Cymru Limited or of the Editors.

NATUR CYMRU
Nature of Wales

Cyhoeddir *Natur Cymru* bedair gwaith y flwyddyn, mis Mawrth, mis Mehefin, mis Medi a mis Rhagfyr. Cyhoeddir erthyglau yn yr iaith wreiddiol. Mae crynodeb yn yr iaith arall yn dilyn pob erthygl. Ceir rhai colofnau arferol yn y ddwy iaith. Os dymunwch gael cyfieithiad o unrhyw erthygl, cysylltwch â'r golygydd.

Bwriedir i *Natur Cymru* hyrwyddo a chyfnewid gwybodaeth am fioamrywiaeth a hyrwyddo dadl. Os oes gennych wybodaeth, erthyglau neu waith celf y credwch a allai fod o ddiddordeb i'r darllenwyr, cysylltwch â'r Golygydd os gwelwch yn dda.

Natur Cymru is published four times per year, in March, June, September and December. Articles are published in the language in which they are submitted. They are followed by summaries in the other language, and some regular columns appear in both languages. If you would like to receive a translation of any article, please contact the editor.

Natur Cymru is intended to promote the exchange of information about biodiversity and encourage debate. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

Caiff *Natur Cymru* ei ystyried fel cyhoeddiad swyddogol NATUR, Sefydliad Rheolaeth Cefn Gwlad a Chadwraeth Cymru.
Natur Cymru serves as the official publication of NATUR, the Welsh Institute of Countryside and Conservation Management.
Cyswllt / Contact: Marie Madigan, Swyddfa NATUR Office, PO Box 192, Priory House, Penmon, Biwmaris, Ynys Môn LL57 9BY
Ffôn / Tel: 07837 419995. www.natur.eu.com. marie@natur.eu.com

Argraffwyd yn y DU gan Cambrian Printers Ltd. Achrediad ISO-14001 a Systemau Rheoli Amgylcheddol blaenllaw. Argraffwyd ar bapur ffynonellau cymysg yr FSC Mwydion o goedwig a ardystir gan yr FSC. Ffynonellau a reolir, heb gynnwys coedwigoedd annerbyniol. Rhif cadwyn gwarchodaeth TT-COC-2200. www.fsc-uk.org

Printed in the UK by Cambrian Printers Ltd. ISO-14001 accredited with award winning Environmental Management Systems. Printed on FSC mixed sources paper. Pulp from an FSC-certified forest. Controlled sources, which exclude unacceptable forestry. Chain of custody number TT-COC-2200. www.fsc-uk.org

Llun y clawr / Front cover:
Emma Bowler - Gannets
ISSN 1742-3740

Dylunio gan/Design by: Mel Parry Design, melparry1@tiscali.co.uk

NATUR CYMRU CYNNWYS • CONTENTS

Golygyddol / Editorial ..... 2 - 3
James Robertson

Transition Wales ..... 4 - 7
Huw Jenkins

Environmental monitoring on Snowdon ..... 8 - 13
Alex Turner

Hairstreaks - Wales' secret butterflies ..... 14 - 18
Richard Smith, Russel Hobson

***Inspired by Nature* Competition Winner - 'Extract from a Victorian Diary'** ..... 19 - 21
Richard Birch

New Naturalist - Brecon Beacons ..... 22 - 27
Jonathan Mullard

Making monitoring count ..... 28 - 32
Sarah Mellor

Agri-environment scheme breaks up ..... 33 - 36
Simon Spencer

***Inspired by Nature* Competition Runner-up - 'The Art of Seeing Kingfishers'** ..... 37 - 38
Chris Kinsey

Geraint George - 1960-2010 ..... 39 - 41
Duncan Brown

NODWEDDION ARFEROL / REGULAR FEATURES

Wales and the world Mick Green ..... 42 - 43

Islands round-up Geoff Gibbs ..... 44 - 45

Discoveries in science - The new endemic whitebeams of Wales Tim Rich 46

Woods and forests - Global trade and woodland pests Huw Evans 47

Hysbysfwrdd / Noticeboard Mandy Marsh 48

NATUR CYMRU GOLYGYDDOL

Aall brwdfrydedd pobl tuag at natur fod yn faromedr ar gyfer iechyd yr amgylchedd? Un arwydd o frwdfrydedd pobl tuag at natur yw'r ymateb anhygoel a gafwyd i'n cystadleuaeth ysgrifennu 'Natur yn Ysbrydoli'.

Daeth bron i drigain o erthyglau i law. Ac er i mi ofni y byddai darllen drwyddynt a cheisio llunio rhestr fer yn waith caled iawn, roedd yn bleser pur. Ag elfen o hiwmor yn aml, ac wedi eu hysgrifennu ag adnabyddiaeth dda o'r darllenydd, roeddent ar y cyfan wedi eu hysbrydoli gan deimladau cryf iawn tuag at eu pynciau.

Sut mae trosi hyn i gyfateb i iechyd yr amgylchedd? Fy marn bersonol i yw ein bod wedi bod yn bur ffodus ag leiaf o'r gwleidyddion sy'n gyfrifol am agweddau ar yr amgylchedd, sydd wedi cydnabod y cysylltiadau dwfn rhwng natur a hunaniaeth genedlaethol, ac sydd wedi helpu i roi Cymru ar flaen y gad â rhai agweddau ar fywyd cynaliadwy. Ond ar ôl etholiad lle daeth yr amgylchedd i olygu newid yn yr hinsawdd, a dim byd arall, faint all gwleidyddion ei gyflawni er lles byd natur?

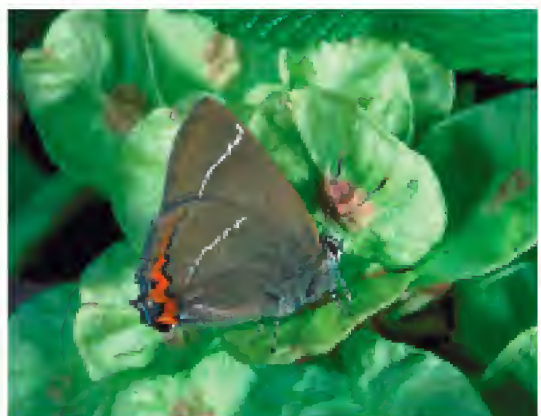
Mae asesiad Mick Green yng Nghymru a'r Byd yn hollol glir. Er yr holl addewidion ynglŷn ag atal colli bioamrywiaeth erbyn 2010, nid oes unrhyw arwydd bod y dirywiad yn ein cynefinoedd a'n rhywogaethau yn mynd i ddod i ben am beth amser eto. Fel y dywed Mick, ein cyfrifoldeb ni yw hyn; rhaid i ni fynd allan a herio'n Cynghorwyr, ein Haelodau Cynulliad, ein Haelodau Seneddol, cyrff cyhoeddus ac unrhyw un nad yw'n cyflawni ei ddyletswydd i ofalu am natur.

Mae'r newidiadau i gynlluniau amaeth-amgylchedd yn arwydd arall nad yw popeth yn iawn. Mae gan Simon Spencer le i fod yn siomedig â'r newidiadau. Mae'n ddigon posibl y bydd ffermwyr sydd wedi darparu manteision gwirioneddol i fioamrywiaeth dan y cynllun Tir Gofal yn gwrthdroi'r manteision hyn os nad ydynt yn ymgeisio, neu os nad ydynt yn cael eu derbyn, gan y cynllun Glastir newydd. A fydd canlyniadau'r newidiadau i rywogaethau a chynefinoedd yn cael eu monitro? Mae toriadau yn nifer y Swyddogion Prosiect yn awgrymu bod asesiad ystyrlon yn annhebygol.

Cyflwynir gwerth monitro hirdymor, cyson mewn modd graffig yn adroddiad Alex Turner am 15 mlynedd o waith monitro yn Eryri fel rhan o'r Rhwydwaith Newid Amgylcheddol. Mae gwaith monitro Sarah Mellor i'r Ymddiriedolaeth Genedlaethol yn enghraifft o waith 'cydgysylltiedig', sy'n dod â manteision amlwg i reolwyr. Prin yw'r cysylltiad yn aml rhwng darganfod beth sy'n digwydd i gynefinoedd a phenderfyniadau sy'n ymwneud â rheoli.

Dyma hanfod yr her sy'n wynebu pobl sy'n ymwneud â gloÿnnod byw, ac sydd â'u gwaith trylwyr wedi datgelu manylion diddorol am leoliad a bywyd y Brithribin Brown. Mae'r prosiect Gwarchod Gloÿnnod hwn yn profi bod gwirfoddolwyr yn gwneud gwahaniaeth, a bod brwdfrydedd yn gallu arwain at ddyfodol gwell i fywyd gwyllt. Gall cymunedau hefyd weithio gyda'i gilydd i ddod o hyd i fodelau newydd ar gyfer byw'n gynaliadwy, fel y disgrifia Huw Jenkins yn ei erthygl ar 'drefi trawsnewid'.

James Robertson



Michael Hammett/CCGC

Brithribin w wen • White letter hairstreak

NATUR CYMRU EDITORIAL

Can the enthusiasm that people feel towards nature be a barometer for the health of the environment? One measure of the former has come from our 'Inspired by Nature' writing competition.

We received almost sixty entries. What I imagined would be a chore, reading through them to select a short-list, proved a real pleasure. Often lifted by humour, and written with a keen sense of the reader, they were generally fired by a passion for their subjects.

How does this translate to the health of the environment? My own assessment is that we have been quite fortunate in at least one of the politicians in charge of aspects of the environment, who has recognised the deep links between nature and national identity, and has helped to put Wales ahead in some aspects of sustainable living. But after an election in which the environment became synonymous with the single issue of climate change, how much can politicians deliver for nature?

Mick Green's assessment in Wales and the World is stark. For all the promises of halting biodiversity loss by 2010, here we are with no sign that the decline in our habitats and species is going to stop any time soon. As Mick says, it is up to us; we have to get out there and challenge our Councillors, AMs, MPs, public bodies and anyone who is failing to do their duty to look after nature.

The changes to agri-environment schemes are another sign that all is not well. Simon Spencer has reason to be dismayed at the changes. Farmers who have delivered real benefits for biodiversity under Tir Gofal may well reverse these gains if they don't apply for, or are not accepted by, the new Glastir scheme. Will the results of the changes on species and habitats be monitored? Cutbacks to Project Officer numbers suggest that any meaningful assessment is unlikely.

CCW

Monitoring on Snowdon

The value of consistent, long-term monitoring is graphically presented in Alex Turner's account of 15 years of monitoring work on Snowdon as part of the Environmental Change Network. Sarah Mellor's monitoring work for the National Trust is a model of 'joined-up' working, bringing clear benefits to management. So often finding out what is happening to habitats is imperfectly linked to decisions over management.

This is the essence of the challenge facing butterfly enthusiasts, whose painstaking work has revealed fascinating details about the location and life of the Brown Hairstreak. This Butterfly Conservation project proves that volunteers are making a difference, and enthusiasm can translate to a better future for wildlife. Communities can also work together to find new models for sustainable living, as Huw Jenkins describes in his article on 'transition towns'.

James Robertson

Transition Wales

Transition Llandeilo Permaculture Group erect a polytunnel

If we think about it, most of us feel somewhat apprehensive about the future, knowing that we face an energy crisis when oil starts to run out, and that natural resources are finite but they are being exploited as if they will last for ever. What's to be done about it? A new movement is finding a way to bring local communities together to find their own answers to sustainable living, as HUW JENKINS reports.

Deep down I know that asparagus in January is an eco sin but sliced up with sugar snap peas and other vibrant greens it makes an uplifting, out of season, summer risotto. I've come to expect these things to be available all year and the recent lockdown of British airspace due to a cloud of volcanic ash was a reminder that such luxuries and conveniences might not last forever.

The long harsh winter saw my steep drive covered in ice for 12 consecutive days – as I trudged up the half mile, rucksack laden with goodies, future shopping lists were based more on weight than whim and I regretted not storing my potato crop. Christmas turkey – thank goodness we went for the small option but maybe we should have reared it alongside our chickens?

Just before Christmas David Attenborough (patron of the Optimum Population Trust) presented a Horizon special titled *How many people can*

live on Planet Earth? As the UK population expects to jump from 61 million (mid 2008) to 77 million by 2050, and the world to jump by more than 2.3 billion to 9.15 billion in the same period, this seems a good question to be asking. I don't remember the precise figures, but it went something like this: if everyone in the world lived like we do in Britain, the world could support 2 billion, and if everyone in the world lived like they do in India, the world could support 16 billion. Some nations take more than their fair share of finite (non-renewable) resources.

The world comes together now and again, striking global deals and setting targets such as at Kyoto or Copenhagen, and nations put in place initiatives such as tradeable energy quotas. Meanwhile there's a grass-roots movement gathering momentum – Transition Towns, or the Transition Network.

The first in mainland Britain was TTT, with the final T standing for Totnes, which was officially 'unleashed' in September 2006. Since then many other communities have joined the transition movement, several of which are in Wales.

The drivers for transition are peak oil and climate change. The latter is widely discussed and debated with varying degrees of acceptance and much head in the sand – surely our waste and pollution can't fail to make an impact?

What is peak oil?

Peak oil is the moment at which cheaply available oil peaks and we move into the phase of declining supply. For 150 years our 'progress' has leapt forward on the back of an ever-increasing supply of easily transportable and dense energy. Now we face the downhill slope with consequent leaps in price and likely disruptions to supply. When will we peak? If we've not peaked already, it's only a matter of a year or two away, although oil companies and others with vested interests might say 20 to 30 years. Of course Britain and the United States peaked years ago.

Oil is immensely rich in energy with a barrel (just under 35 imperial gallons) producing 6.1 gigajoules.

Nino Barbieri

What price imported asparagus?

Many debates try to put that into an easy-to-assimilate equivalence and these tend to be in terms of human years of hard labour. There are many versions of this calculation, from one year of a Tour de France cyclist to over 12 years of a not-so-fit person. At 1 barrel = just 1 year of (very) hard labour, and with the average American consuming the equivalent of 60 barrels per year, that's the equivalent of 60 slaves.

Transition towns

Transition towns or communities aim to meet the challenges of peak oil and climate change with local action inspiring people to reinvent the way we do things, more local, more sustainable – less midwinter asparagus! Typically they will create an EDAP, an Energy Descent Action Plan, which plans for the assumed inevitable reduction of cheap energy rather than waiting for the misery of what to do when it happens. They also seek to build resilience and vigour into local communities, with less reliance on mass production and global trade.

The first Transition Town in Wales was Llandeilo

©Spanner Films

The Age of Stupid

Transition Llandeilo

Prince Charles meets Transition Llandeilo

which began its transition in 2007. Currently there are nine working groups, one of which is Cymdeithas y Dalar, the allotments project on National Trust land at Dinefwr Home Farm. After ploughing, the land was divided into 61 allotments that were snapped up in April 2009 and yielded an impressive range of first year crops celebrated at the equinox party.

Afallon Teilo is another of the groups which was formed to encourage local people to grow more apples, and to eat locally grown fruit. Yet another group took action to save the Dryslwyn post office from closure by turning it into a community shop run on a not-for-profit basis and now selling organic Welsh Black beef.

Each of these groups is doing something practical to face up to the challenges and also to inspire and empower people in a hands-on way that they can make a difference. *The uncertainty of our times is no reason to be certain about hopelessness...* a quotation from Vandana Shiva, which is included within the Transition Initiatives Primer, a great introduction into what the Transition Network is about and how to get started.

The Age of Stupid

Typically the start, or 'unleashing', includes a raising of awareness through a series of meetings and discussions with a list of suggested films to provoke and stimulate debate. I ordered one of these films over the internet and sat down with my family to relax before bedtime – but it was the stuff of nightmares and kept us up talking about ways in which we could make a difference. The film was titled *The Age of Stupid* and uses real footage of events in recent years, ranging from Hurricane Katrina to protesters against a wind farm in Bedfordshire, and projects the consequences of not taking action forward into 2055. The film concludes with Pete Postlethwaite questioning how we could just watch it happen, then, from on board a modern day Noah's Ark, pressing a button to beam into space the story of man's destruction. Sorry if I've spoilt the ending!

Of the 201 UK towns or communities listed on the Transition Network there are 13 in Wales and these are: Bangor, Bro Ddyfi, Bro Ffestiniog, Bro Gwaun, Calon Teifi, Chepstow, Hay on Wye, Lampeter, Llandeilo, Llandrindod Wells, Llantwit Major, Presteigne and Rhayader. But this is probably the tip of a fast growing mycelium (seems more appropriate than iceberg!) with many others following a similar path.

It's early days and many of the groups and projects are at the formative stage of generating interest and awareness. Most can boast successful allotment or food production initiatives, which is not surprising as this is an area where results can be achieved in a

Transition Llandeilo

single growing season. Conversely energy projects, especially generation, have a long lead in and need much planning and capital.

There is nothing too prescriptive about the Transition Network: each can take or adapt the principles as it sees fit. Y Dref Werdd, the Blaenau Ffestiniog Green Town project, organised by Communities First, has all the characteristics and interest groups of other transition towns, yet approached from the *community* rather than *environmental* angle. Getting back to the basics of local produce and energy can be an effective rallying call around which to unite and regenerate a community.

For more information visit **http://www.transitionnetwork.org** where, amongst other things, you can download the excellent Transition Initiative Primer. Another good quote from the primer: *We used to be hunter-gatherers, now we're shopper-borrowers* – Robin Williams, 1990.

***Huw Jenkins** is a keen explorer and writer especially about things in Snowdonia. As well as being part-time marketing manager for* Natur Cymru *he is the local community reporter for BBC Radio Wales and a regular contributor to Country Focus.*

Transition Llandeilo

Trefi Cymru'n Trawsnewid

Tra bo rhai ohonom yn dewis gwylio, o bell, y gwleidyddion yn trafod yr amgylchedd ar lwyfannau byd, mae'n well gan eraill wneud rhywbeth ymarferol yn lleol. Menter felly, wedi'i gwreiddio yn y gymuned, yw 'Trefi Trawsnewid'. Pryder am newid hinsawdd a diffyg olew yn y dyfodol oedd y rhesymau am sefydlu rhwydwaith o drefi trawsnewid nôl yn 2006. Bellach mae 13 o drefi trawsnewid yng Nghymru.

Y nod yw annog pobl i feddwl o'r newydd am y ffordd maen nhw'n byw fel ei fod yn fwy lleol a chynaliadwy. Trwy baratoi at heriau'r dyfodol mewn ffordd gadarnhaol mae modd adfywio cymunedau ar yr un pryd. Llandeilo oedd y Dref Drawsnewid gyntaf yng Nghymru. Ymysg y gweithgareddau sy'n digwydd mae creu rhandiroedd ar dir ystad Dinefwr, annog pobl i dyfu a bwyta afalau lleol a throi swyddfa bost y Dryslwyn yn siop gymunedol.

Mabwysiadu'r egwyddorion am ddefnyddio cynnyrch lleol a lleihau dibyniaeth ar olew sy'n bwysig – mae rhwydd hynt i bob tref trawsnewid esblygu mewn ffordd sy'n addas i'r amgylchiadau lleol. Gwneud rhywbeth ymarferol i gwrdd â'r her, ac ysbrydoli pobl i wneud gwahaniaeth yw'r hyn sy'n gyffredin i bob gweithgaredd, ym mhob Tref Trawsnewid.

CCW

Environmental monitoring on Snowdon

Snowdon Horseshoe

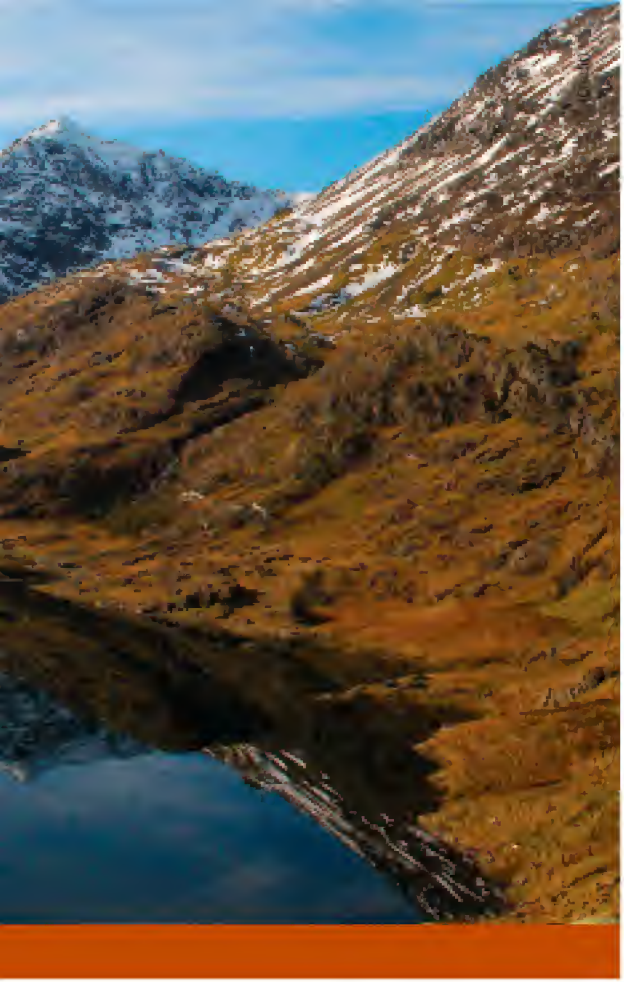
Long-term monitoring at the Environmental Change Network site on Yr Wyddfa/Snowdon began in 1995. After 15 years recording, ***ALEX TURNER*** *considers what has been found and what the future of monitoring here might hold.*

Alex Turner

Moss campion

The Environmental Change Network (ECN) site on Yr Wyddfa or Snowdon was described in an early article in this publication in 2001 by Clive Walmsley[1], when the site had only been operational for six years. After now running for 15 years, the picture we have of the mountain environment is more developed than the earlier article indicated. As we approach the 15 year point, we are starting, in some of the datasets at least, to see less 'noise' and more underlying 'signal'.

The ECN was launched in 1992 as the UK's main long-term integrated monitoring programme. The focus is on collecting, storing, analyzing and interpreting long-term data based on a set of key physical, chemical and biological variables[2]. It comprises a network of 12 terrestrial and 45 freshwater sites, where every site measures the same things in the same way. Snowdon was chosen partly because there has been a history of research going back to the 1950s; in particular between 1966 and 1977, it was the focus of research under the International Biological Programme (IBP), a global research programme looking into the flow of nutrients and minerals through ecosystems.



CCW

Precipitation monitoring

Snowdon is a flagship site within Wales, not least because of its iconic status as the highest mountain south of the Scottish Highlands. In conservation terms it also ranks highly, having been designated as a National Nature Reserve as long ago as 1964, and forms a part of the Eryri Site of Special Scientific Interest and the Eryri Special Area of Conservation. The site is particularly important for its assemblage of relict arctic-alpine species and montane habitats, many of which occur here near the southern limit of their range in the UK.

At Snowdon the range of variables we monitor includes not only the standard set of network measurements, but also a site-specific set of complementary variables which give extra useful information but require only a minimal amount of extra effort. These 'extras' include phenological recording (the recording of the timing of events such as flowering), and the monitoring of arctic-alpine plants and fungi. Also we collect data at the site for the National Ammonia Monitoring Network, the Acid Deposition Network and a Pollen Monitoring Programme for Hull University.

Climate trends

The winter of 2009/2010 has been notable for its length and severity – the most severe for 18 years according to the press, but does this mean things are getting cooler? It is certainly true that there was more snow on Snowdon than any winter since we started recording, but looking at temperature data over the longer-term, the picture is different. Despite the severe winter, there is a consistent positive residual and even a slight rising trend in maximum and minimum temperature.

We've noted a significant link between the average monthly temperature residual with that of the monthly North Atlantic Oscillation index. This index is a measure of the difference in atmospheric pressure between Iceland and the Azores, with positive values occurring when the paths of low

Alex Turner

The ECN site in Winter

depressions are more northerly, and negative values when low pressure systems pass to the south of the UK. The recent cold weather has coincided with a run of months with a negative index. It should be noted that temperatures over Northern America have been well above average while we've been experiencing our cold winter[3].

Atmospheric and water chemistry trends

Atmospheric pollution has had a strong impact on upland ecosystems with many habitats poorly buffered against rain acidified with SO_2, which originates principally from fossil fuel combustion. Changes in emissions legislation since the 1960s have seen a reduction in atmospheric SO_2, but corresponding changes in lake water chemistry have lagged behind somewhat. We sample rain water, water from the outflow of Llyn Teyrn and water from soils under calcareous grassland. The trend in rainfall pH has been for a fairly rapid rise from 1997 to 2003 and then a levelling off at around pH 5.3; this has occurred with a slow decrease in the concentration of sulphate and nitrate. Streamwater has followed a similar pattern, levelling off around

Alex Turner

Purple saxifrage *Saxifraga oppositifolia*.

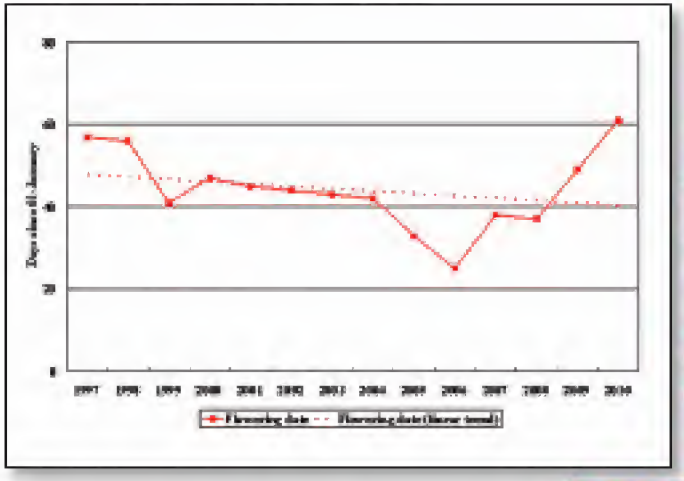
pH 5.5, with soil water continuing to rise, particularly water collected from deeper soil horizons. Dry deposition (deposition in the absence of rain) of nitrate and sulphate are measured using diffusion tubes, and while the former shows a decline, the latter shows a slight rising trend, and this may explain the levelling off of the pH in rain and stream water, with nitrate starting to replace sulphate as the dominant acid-forming anion in the water.

Biological changes

Changes in numbers of animal and plant species are the main driven variables that we measure on Snowdon. We monitor various vegetation types at different temporal scales, and also undertake weekly recording of the timing and duration of flowering of a large number of species which occur close to the main sampling area above Llyn Llydaw. In our monitoring of animal species we include birds, butterflies, bats, beetles, spiders, and spittle bugs.

Since we started monitoring vegetation in 1999, it has shown little or no discernible change in composition. The main noticeable change we've seen for plants has been in the timing of flowering. This has been quite significant for some species, in particular, Purple Saxifrage *Saxifraga oppositifolia*, an arctic-alpine, which occurs at its lowest altitude on Snowdon close to our main sampling area. Monitoring of this species started in 1997, and from then until 2008 there was a pronounced trend

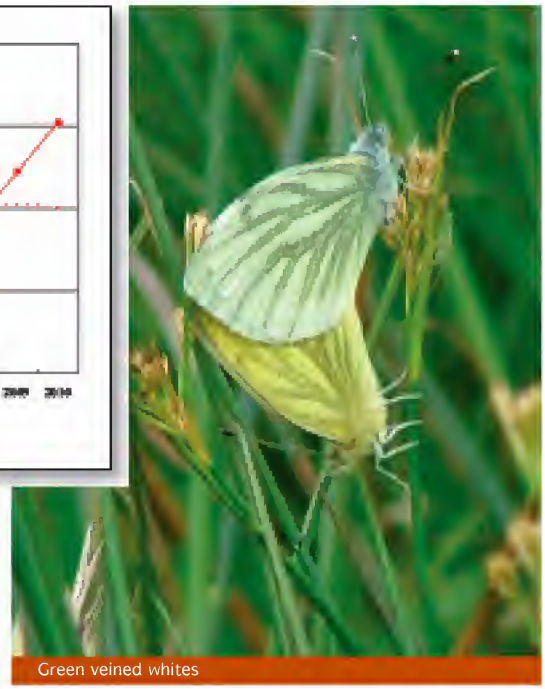
Purple saxifrage first flowering in days from 1st Jan.



towards earlier flowering, with the flowering coming forward about 20 days by 2008. Since 2008, however, with a late snowy February and March in 2009 and this year's severe winter, the date of first flowering has returned to a point much later in the spring. Looking at the long-term, however, the overall trend is still for earlier flowering, but the precise factors determining flowering date are still unclear although obviously temperature related.

Green-veined White *Pieris napi* and Small Heath *Coenonympha pamphilus* are the two main resident butterfly species found on the site, but there can be significant numbers of migrant butterfly species on warm days in mid-summer e.g. Painted Lady *Cynthis cardui* in 1996 and 2009. Average butterfly numbers per transect have slowly gone up since we started recording in 1996, which tracks the increase in maximum and minimum temperature noted above. This upward trend, however, hides a relatively large variation over that period; there were much higher than average numbers per transect during the relatively drier summers of 2004-2006 than during the recent wet summers of 2007-2009.

Ground beetles and spiders are collected on the site using three transects of pitfall traps located in different grassland types. Ground beetles, in particular, are generally thought to be good indicators of climatic change, some species having quite narrow climatic tolerance, as indicated by their



CCW

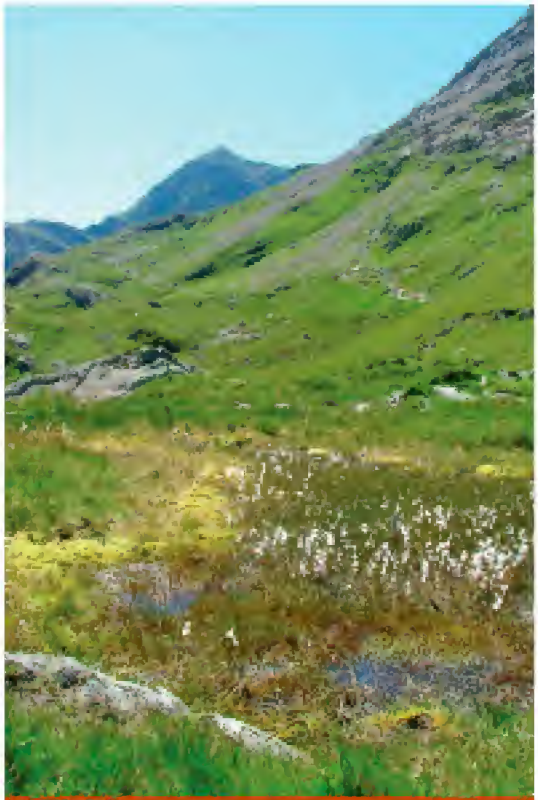
Green veined whites

use in reconstructing interglacial and late-glacial environments[4]. Total numbers of beetles and spiders have fallen overall since we started trapping in 1999 and 2000 respectively, although composition of the catches has not changed appreciably. Initially we were concerned that this decline might be due to overtrapping rather than having an environmental cause. Data from supplementary transects set out in similar habitats and at other locations isolated from the core trapping sites indicated that we were not overtrapping. Comparison with some of the other ECN sites across the UK points to a change occurring as a result of relaxation in grazing pressure, almost certainly as a result of CAP reform – presumably the increased structural complexity of the vegetation is reducing the range and activity of the ground beetles. Interestingly, the downward trend appears to have now halted and numbers have been rising since 2007. Such temporal changes highlight the value of long-term monitoring.

Bats

Among the vertebrate groups we monitor on the site, bats and frogs are of particular interest. Bats,

CCW



Frog pond

contrary to most people's expectation, do indeed occur on Snowdon, and doing bat transects at night on Snowdon is one of the highlights of the monitoring work. Bats can be found up to quite high altitudes (over 670m), and probably roost in some of the old copper mines and ruined buildings which occur on the mountain. They are mostly either Pipistrelles *Pipistrellus sp*. or Daubenton's *Myotis daubentonii* and most of the activity we've recorded has been close to or over the lakes – Glaslyn and Llyn Llydaw – although in warmer summers they can be recorded in other areas. Whether the bats hibernate in the mines on Snowdon or move to lower, warmer locations during the winter is not known, and some automated bat detectors placed near the entrances to a number of the tunnels would provide useful background information. The variation in bat numbers is considerable and does not seem to follow any obvious pattern, although during the wet summers of 2008 and 2009 numbers have been low.

Frogs

Frogs also occur widely on Snowdon and we monitor activity in two small ponds at around 550m altitude. The pattern of activity since we've recorded has not shown an obvious trend, in part because the frogs have been caught out several times by late snowfall and all the spawn laid has been killed. The duration between spawning and metamorphosed frog dispersal from ponds has been decreasing until last year when adult frogs weren't seen until September – possibly the relatively cool summer retarded development.

The wider ECN network

The wider ECN suite of sites provides a framework in which to interpret the data collected on the Snowdon site. The other terrestrial sites vary from woodland sites (Alice Holt, Wytham Wood) through experimental agriculture sites (Drayton, North Wyke) to mountain sites (Cairngorm, Moor House). An analysis of the data collected from the first 15 years of operation[5] shows that many of the changes seen at Snowdon are reflected across the network. In particular, all the sites are seeing a trend of increased temperature and precipitation. Also, pH has risen and deposition of sulphate has decreased. Vegetation has shown little change in composition in response to rising pH which may be a due to slower processes of change in plant communities or some more complex reason associated with soil structure. Warm-adapted butterflies have tended to increase at northern upland sites while ground beetles in these areas have shown declining populations.

Future monitoring

The value of monitoring data increases in line with the length of time over which collecting has taken place. Some would even say that the value increases in a non-linear fashion, becoming more and more valuable the longer it is done. Using the same methodology across a network also increases the value: as time goes on we should be able to discern more clearly the underlying environmental signal responses over short-term site-specific noise. This should help with the testing and validation of models of ecosystem processes under climate change. The Snowdon site is well placed to look at the impacts of climate change on

CCW

Arctic-alpine recording

arctic-alpine species, species which often have a temperature-limited distribution throughout the UK. The network as a whole is also admirably placed to respond to new requests for data. As I write, a number of the ECN sites will be taking part in an exercise coordinated by the Macaulay Institute in Aberdeen to look at the effect of the ash cloud from the Eyjafjallajökull volcano in Iceland.

Alex Turner is the ECN Project Officer with the Countryside Council for Wales.

Acknowledgements

Thanks to Vic Bowmaker, Dafydd Parry, Dylan Lloyd, Matty Murphy, Mike Whittaker and Maggie Hatton-Ellis for collection and analysis of data. I am grateful to the Baron Hill Estate for permission to monitor at the site.

References:

1. Walmsley, C.A. (2001) *Climate Change on Snowdon – what does it mean for wildlife?* Natur Cymru 2, 19-22.
2. ECN website: www.ecn.ac.uk.
3. http://neo.sci.gsfc.nasa.gov/search.html
4. Coope, G.R.(1977) *Fossil coleopteran assemblages as sensitive indicators of climatic changes during the Devensian (last) cold stage.* Philos Trans R Soc London B, 280, 313-340.
5. Morecroft *et al* (2009) *The UK Environmental Change Network: emerging trends in the composition of plant and animal communities and the physical environment.* Biol Cons. 142, 2814-2832.

Dechrau deall y darlun...

Mae'r Wyddfa yn un o 57 safle yn y DU a ddewiswyd, yn 1992, i fod yn safleoedd monitro tymor hir. Fe'i ystyriwyd yn safle amgylcheddol pwysig, yn enwedig ar gyfer nodweddion fel planhigion arctig alpaidd ac roedd hanes o fonitro yma yn dyddio nôl i'r 1950au.

Dros 15 mlynedd casglwyd data ffisegol, cemegol a bywydegol o'r safle hwn, yn ogystal â gwybodaeth am ffenoleg, ffyngau a phlanhigion arctig alapidd. Cesglir data hefyd i helpu monitro amonia, dyddodiad asid a phaill.

Faint mwy ydyn ni'n gwybod am ein hamgylchedd mynyddig ar ôl 15 mlynedd? Mae'r tymheredd uchaf a lleiaf wedi cynyddu ychydig dros amser ac mae glawiad wythnosol ar gynnydd hefyd. Ond ni welwyd newid amlwg yng nghyfansoddiad y llystyfiant. Amseriad blodeuo yw'r prif newid, fel yn achos y tormaen porffor a ddechreuodd flodeuo 20 diwrnod yn gynt yn 2008 o gymharu â 1997. Ond mae'r amseriad wedi newid eto a'r ffactorau sy'n dylanwadu yn dal i fod yn aneglur.

Cynyddodd glöynnod byw, yn gyffredinol, gyda'r tymheredd ond mae hafau sychach yn denu llawer mwy. Er i niferoedd chwilod a phryfaid cop ddisgyn mae'r cyfansoddiad yn debyg – efallai bod y pori ysgafnach a'r tyfiant mwy trwchus sy'n deillio o hyn yn effeithio ar y niferoedd a ddaliwyd. Ond ers 2007 maen nhw ar gynnydd eto – sy'n dangos gwerth monitro tymor hir. Ni welwyd unrhyw newidiadau arwyddocaol yn niferoedd ystlumod a brogaod ar y mynydd.

Newidiadau tebyg sydd i'w gweld ar draws yr holl rwydwaith o safleoedd monitro hirdymor ECN, yn arbennig y glawiad trymach, y tymheredd uwch, y cynnydd mewn pH a'r lleihad mewn sylffwr deuocsid a hefyd y cynnydd yn nifer y glöynnod sy'n hoff o lecynnau cynnes ar safleoedd mwy gogleddol.

Hairstreaks -
Wales' secret butterflies

Jim Asher/Butterfly Conservation

Brown hairstreak *Thecla betulae*

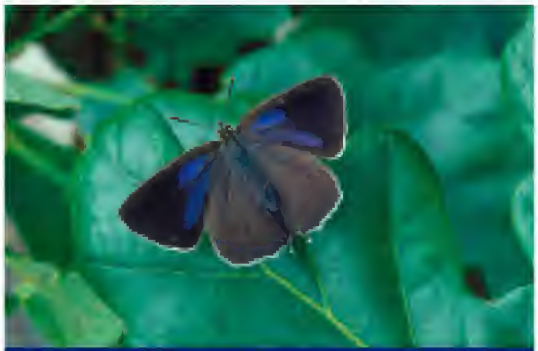
Butterflies are day-flying, visually striking insects that you can't miss. Or are they? Hairstreaks are hard to observe, and it has taken much dedication by a group of volunteers to find out more about the rarest of the four species of Hairstreak in Wales, the Brown hairstreak. The result has been a breakthrough in our knowledge of where they are and efforts to manage their blackthorn habitat, as RICHARD SMITH and RUSSEL HOBSON describe.

The Brown Hairstreak *Thecla betulae* is one of Wales' most fascinating butterflies. It is one of a group of rarely seen insects (see box on page 16) that reveal another world above our heads. This article describes the work of a dedicated band of volunteers who, over the last ten years, have been untangling its distribution. We also report on recent work to recruit an entire community to help with its conservation.

The Brown Hairstreak is associated with lowland clay soils and has a patchy UK distribution. Before 1982, Welsh records stretched from coastal Montgomeryshire in the north, through lowland Ceredigion, most of Pembrokeshire (except the extreme west) and most of Carmarthenshire (except the extreme south, roughly north of the A48/A40 trunk road). By 2004 targeted egg surveys showed a range contraction of 50%. The survey results for the 5-year period up to 2009 are not yet fully analysed, but anecdotal evidence from surveys by Butterfly Conservation volunteers does not suggest any recovery.

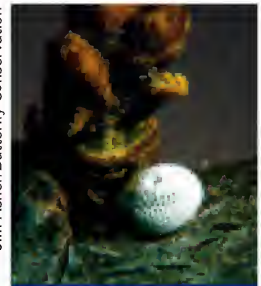
The work started in the winter of 1999 with just three surveyors. We

Michael Hammet/CCW



Purple hairstreak

Jim Asher/Butterfly Conservation



Brown hairstreak egg

revisited the roadside hedges where internationally famous lepidopterists Jeremy Thomas & Tom Tolman had found eggs during the winter of 1987. Once we found one egg in a 10km square (proving occupation), we moved on. We quickly worked through more than fifty 10km squares comprising the pre-1987 range. This was a quick and efficient, but a very superficial method of assessing the extent of range.

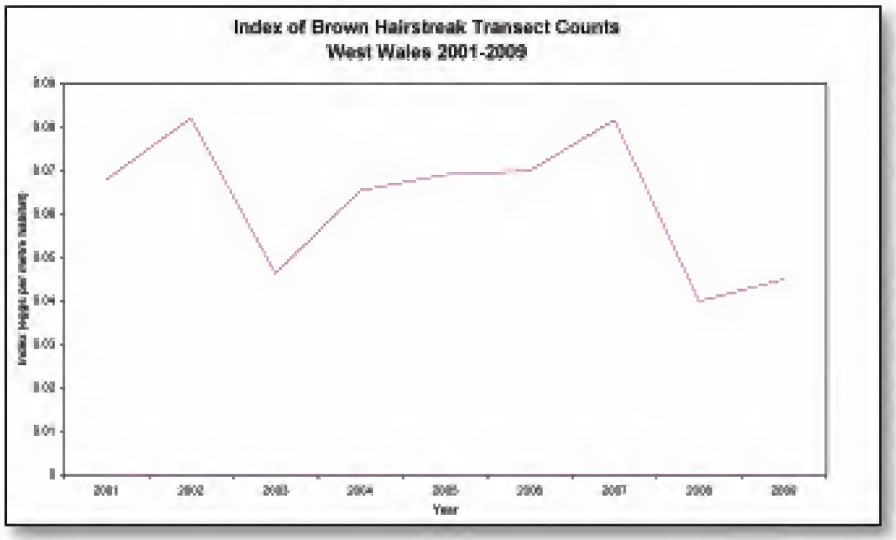
Refining the winter survey approach

The next stage was to explore the strength of these local populations. We spread out into adjoining fields, searching hedges and scrubby areas. Volunteer travel costs were provided by Carmarthenshire Local Biodiversity Partnership. After further trial surveys we embarked from 2003 on what became an annual winter egg survey, assessing population strengths in a 1km radius of recent egg records. We focussed on Tir Gofal farms or smallholdings and always sought permission. Some farmers do think we are crazy wanting to look for butterfly eggs in their hedges in deepest winter!

The habitat, location of eggs and area searched have been mapped every year and, by modelling the landscape area using each record from 1995 to 2009, we can calculate that there are approximately 200,000 hectares of lowland south west Wales which would support Brown Hairstreak if there were sympathetic hedge/scrub management in place.

Population strength

By 2004, we started to divide our time between surveying new areas and undertaking annual counts at the best sites. These were defined as having at least 40 eggs in a 0.5km radius. The counts were done where egg density had exceeded one egg per 10m of hedge. The 10-15 sites are revisited annually and the overall trend has dropped over the last three years. This may be partly due to three poor summers but there is a clear upward trend on the sub-set of sites in sympathetic management. On sites left to the depredations of regular flailing, there is a bigger downward trend, with almost complete loss of local populations on at least three sites in the last two years.



What are 'hairstreaks'?

A 'hairstreak' is actually a family of butterflies in the genus Lycaenidae, or 'blues'. There are 10 'blues' in Wales, including the four hairstreaks. The Common Blue and Holly Blue are the most familiar, the others being the Small Blue, Silver-studded Blue, Brown Argus and Small Copper. The four hairstreak species are strongly associated with either tree canopy or shrubs or shrubby plant species. Being small and cryptically camouflaged, they are overlooked. Not surprisingly records and thus distribution knowledge are somewhat patchy in Wales.

- Green Hairstreak *Callophrys rubi* are seen in May and June, classically perched on hawthorn or bilberry in upland areas, where their green ground colour can be cryptic. They are distributed across most of Wales, with under-recording possibly masking some declines.
- White-letter Hairstreak *Satyrium w-album* emerge in mid June and persist often into August, but spend most of their time in the elm canopy, where breeding takes place. There is an eastern bias to their Welsh distribution.
- Purple Hairstreak *Neozephyrus quercus* usually start flying in July and have similar habits to White-letters, but this time on oak trees (on which they breed) or nearby ash canopy (for honeydew). They are more widely recorded in north and mid Wales, but are probably common throughout Wales.
- Brown Hairstreak appear the latest (late July into early October) and assemble in the sheltered canopy of medium/large trees, often ash, where mating occurs. The females then fly off to find low level young blackthorn on which to lay their over-wintering eggs. They are found in south west Wales.

Jim Asher/Butterfly Conservation

Green hairstreak *Callophrys rubi*

'Butterfly Friendly Hedgerows' – a pilot community project in the Teifi valley

In winter 2009/10, we secured funding from Heritage Lottery Funds 'Awards for All' scheme to run a pilot project in Carmarthenshire. The aim was to encourage an entire local community to embrace butterfly friendly hedgerows and land management. We chose the Llangeler area, close to the Teifi. It had several landholdings with low intensity hedge management and over two hundred eggs had previously been found but with much more potential land to search.

Delivering the message

We spoke to or delivered invitations to 40 people/properties, with 18 people attending our two events at the local village hall. The events were aimed at everyone, showing what could be done in various situations such as gardens, community fields, green lanes, low intensity traditional farms, modern commercial farms and country businesses. From feedback forms and subsequent follow up, we were delighted to be invited to survey new land holdings (plus two people who went off to survey their own land) and eight new people have volunteered to join our survey team, five of whom have regularly been out with us.

The project has worked well, finding both plenty of excellent habitat in the form of young scrub blackthorn around field edges and/or unflailed bushy hedges and very willing landowners. For instance, Hilary & Paul Kennelly at the West Wales Museum of Childhood (on the A484 just north of Llangeler

Jim Asher/Butterfly Conservation

White-letter hairstreak *Satyrium w-album*

village) were amazingly helpful. They have eggs in the hedge around the edge of their car park, and a nature trail across three fields with young blackthorn had nearly 100 eggs along it. They have also helped in other ways, allowing the use of their car park and café to meet up and helping to design our 'Butterfly Friendly Hedgerows' discs and other promotional work.

Delivering management

As part of the project we were offering to help landowners coppice old blackthorn, keeping a steady supply of young plants/shoots for Brown Hairstreaks. We identified three work tasks that were acceptable to – indeed gratefully encouraged by – the landowners. At a holiday cottage let, assisted by our able local contractor, we carried out coppicing at the back of a developing thicket, having first placed coloured pegs to identify (and therefore retain) the younger plants at the front which bore the current year's eggs. Four volunteers helped clear away the brash and protect the re-growth from horses. The owner prides himself on his wildlife friendly approach, which helps his business, as clients like to know what wildlife is being fostered.

We carried out a similar task at another smallholding. The owner was delighted that three of his smaller valley bottom fields held over 80 Brown Hairstreak eggs. This adds to his holding's species total, much of which he manages for its species-rich hay meadows.

At the museum, virtually half of the eggs were in the smallest field (Cae Bach) alongside the woodland, laid on suckering/seeded young plants. The problem was vigorous bramble runners smothering the blackthorn. So we set to work to remove as much as possible over two half days. In so doing, a further 15 eggs were revealed, not accessible on initial survey. We are looking forward to searching for caterpillars in late May/early June and to watch for the female Brown Hairstreaks descending to egg lay in August & September.

Displaying the discs and logos

All these holdings have proudly displayed our 'Butterfly Friendly Hedgerows' discs around their properties, together with at least two more people who attended our events. The discs tell the world, particularly neighbours, visitors and passers-by (and potential flail contractors) that wildlife, and particularly this distinctive local butterfly, is being encouraged. All farms surveyed will receive a map showing habitat quality and egg numbers this year, field by field, together with a reminder of suggested management (including a rotation plan where applicable). An electronic version of the disc is also available for use on owners' websites and letterheads.

So, how many eggs and new sites?

After surveys on 18 different dates between December & March, within a 5km radius of the museum, we finally notched up a total of 573 eggs, across 22 different land holdings. Of these, 16 were new sites and put six new occupied 1km grid squares on the Brown Hairstreak records database. At least 90 volunteer days have been put into the project to date.

What now?

Although it's still early days, this winter's efforts around Llangeler have been very worthwhile. We'd like to try to ensure that momentum is maintained, with opportunities to develop and widen the project throughout this year and in future winters. Several unique opportunities have opened up and the area looks set to become established as a Brown Hairstreak success story. It all depends on landowners, volunteers and goodwill; at the moment we have a bounteous supply of all three.

Michael Hammet/CCW

Where to with Brown Hairstreak at landscape level in Wales?

After ten years of talking to several hundred landowners we have learnt a great deal. There have been major finds of previously unknown populations, particularly 560 eggs in 2004 on one farm west of Carmarthen, 350 eggs in 2007 on one farm in Cothi valley (until it was all flailed) and 573 eggs in 2010 around Llangeler in the mid Teifi valley. We now have a dozen land-holdings in completely sympathetic management, entirely by unwritten voluntary agreement.

Food for thought

There is little doubt that Brown Hairstreaks survive in south west Wales largely because of small landowners who are not managing their land or hedges intensively. There is also a limited but positive contribution from low intensity silage or hay fields, cropped fields, agri-environment schemes and a number of nature reserves. However, that leaves out most of the commercially farmed landscape, where devastating annual hedge flailing is epidemic. Studies have shown that annual hedge flailing destroys, on average, 80% of eggs each year, resulting in local extinction in three years. Other studies have found that, for good quality hedges, trimming on rotation over a 3-4 year period saves landowners up to 60% in costs. Why are so many landowners wasting money and fossil fuels in the trimming of all their hedges annually? Some of this is because of fear of highway enforcement letters regarding roadside hedges, some of it is contractors wanting regular work and some of it is peer pressure and misguided notions of tidiness. Annual cutting of roadside hedges may be necessary but can the rest really be justified? With high fuel costs, a more relaxed view of what a tidy hedge should look like would save money as well as promote wildlife.

Richard Smith *is Events Co-ordinator for Butterfly Conservation's South Wales Branch and* ***Russel Hobson*** *is Head of Conservation, Butterfly Conservation Wales.*

Bro'r Brithribin

Mae'r brithribin brown yn un o'r 10 glöyn byw sy'n perthyn i deulu'r 'glesynnod' ym Mhrydain – ac mae'n prinhau. Ers 1999 bu gwirfoddolwyr, yn cynnwys un gymuned gyfan, yn darganfod mwy am ei ddosbarthiad Cymreig.

Gallai 200,000 hectar o dir yn ne-orllewin Cymru fod yn addas ar gyfer y brithribin brown, pe cai gwrychoedd a phrysgwydd (lle caiff yr wyau eu dodwy) eu rheoli'n briodol. Mae ffustio gwrychoedd yn gyson yn ddinistriol iawn – collwyd tair poblogaeth bron yn gyfangwbl yn Sir Gaerfyrddin dros y ddwy flynedd ddiwethaf.

Sefydlwyd prosiect yn ardal Llangeler llynedd i annog cymuned gyfan i warchod y brithribin brown – boed ar ffermydd, lonydd, gerddi, tir busnes neu barciau. Cafwyd hyd i wirfoddolwyr a safleoedd arolwg newydd, a pherchnogion tir sy'n fodlon helpu'r glöyn byw hwn. Darganfuwyd 573 o wyau ar 22 daliad gwhanol a 16 o'r rhain yn rhai newydd. Cafodd deiliaid tir help i docio hen lwyni drain duon er meyn cael tyfiant newydd ar gyfer yr wyau, ynghyd â map yn dangos lleoliad a niferoedd wyau a chanllawiau rheolaeth.

Mae'n debyg bod y brithribin brown yn parhau yn y de orllewin oherwydd bod yno gynifer o ffermydd bychain nad ydynt yn cael eu ffermio'n arddwys. Does fawr ddim gobaith iddo ar ffermydd mawr masnachol. Mae ffustio gwrychoedd bob blwyddyn yn dinistrio tua 80% o'r wyau ac yn arwain at ddifodiant llwyr o fewn 3 blynedd. A hyn ar waetha'r ffaith bod tocio ar gylchdro 3-4 blynedd yn arbed 60% o gostau. Dyna beth yw gwallgofrwydd.

Inspired by Nature competition winner

***RICHARD BIRCH** has brought to our attention the following document; the remarkable powers of observation and deduction revealed therein are of lasting interest to the naturalist.*

EXTRACT FROM A VICTORIAN DIARY (ANON), 1889

In the autumn of 1889, on the explicit instruction of his personal physician (myself), The Great Detective was prevailed upon to seek rest and recuperation, to which, surprisingly, he agreed.

"I have a desire to go here," he said, unfolding a map of Wales and indicating the island of Anglesey; and so it was I went forth to make the necessary arrangements, and the next day we caught the train from Euston to Bangor, North Wales.

I had arranged to stay in a boarding house in the mining port of Amlwch, on the north-west coast. It was dark when the local train pulled into the station, and the air was heavy with brimstone. First impressions were far from salubrious; nevertheless, I had never before cause to doubt his choice.

At breakfast the following morning, my companion was full of enthusiasm. He had already taken a constitutional around the town, and pronounced it a capital choice to spend a relaxing weekend.

After breakfast, we hailed a carriage to take us to Parys Mountain, an opencast mine east of the town. The superintendent was a Cornishman[1], and had heard of my esteemed companion, although many of the local Welsh miners had not. Nevertheless, we were granted access to an adit of particular interest, and although the air was nauseous, we lit lanterns and plunged inside.

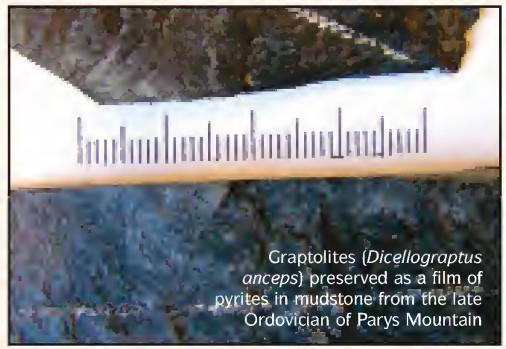
"Observe, Doctor, we stand beneath the mud of a deep ocean in Ordovician times. This rock was here even before the volcanic activity that deposited the minerals being mined so assiduously."

EXTRACT FROM A VICTORIAN DIARY...

Photos by Richard Birch

"How can you know that?" I asked.

"It's written for all to see. Look here – " he pointed at some white marks in the dark rock. "Graptolites, extinct colonial marine creatures preserved as fossils[2]. They are as accurate as a date stamp."



Graptolites (*Dicellograptus anceps*) preserved as a film of pyrites in mudstone from the late Ordovician of Parys Mountain

A brilliant blue mineral, the colour of lapis scattered across the floor, caught his eye. "Ah yes, a form of copper sulphate I don't doubt." He produced a spatula from the pocket of his coat and proceeded to scrape some into a phial.[3]

We entered deeper into the adit. "I have a desire to see some of the caves' inhabitants; come, Doctor, hold your lamp aloft so that we may illuminate the ceiling."

Wings of lesser yellow underwing and angle shades, adit floor Parys Montain 2009

I did so, but the light was inadequate to penetrate the Stygian darkness. "It's no good. These lamps are not nearly bright enough."

My companion laughed. "On the contrary, my good friend. Not only is it possible to deduce the fact that bats have occupied this adit, but what kind of bat they were, and when they did so. Shine your lamp here, on the floor."

I did so, and noticed that there was a scattering of moth wings.

"Remark, my friend: all these wings belong to but a few species, all of which are in the family *Noctuidae*. These moths have a specific flight period: here a Yellow Underwing. It flies in July. Here an Angle Shades: it has a longer flight period, but July numbers are bolstered by immigration. Elementary reasoning would therefore point to a moth predator occupying this cave in that month, and further –" he continued "– moths consumed at the roost in this manner are typical of the long-eared bat."[4]

After a tour of the mines expressly in honour of our visit, which my colleague found eminently fascinating, our carriage took us across the island to Rhosneigr, a journey of over an hour. After a repast of cold mutton at a local inn, my companion suggested we aid our digestion with a constitutional along the beach. Here he found much of interest in the flotsam on the shoreline. I myself found a small, intricately carved wooden figurine, which I put to him enquiringly.

"My dear Doctor," he responded soberly after a moment's reflection. "This is a Haitian voodoo doll; I rather fear that in August last year, the death by drowning of a pregnant woman from those islands was induced by supernatural causes involving the use of this doll.

"We infer this by the nature of the carving. See? The figurine is shown with distended belly. I estimate the lady was eight months pregnant. Had the child lived, it would be a year old now."

EXTRACT FROM A VICTORIAN DIARY...

Entada gigas on the strandline

"But how can you be sure of this?" I said aghast.

He produced, from his pocket, items that he himself had picked up during our constitutional.

"This, Doctor, is a seed from a tropical plant that accompanied your figurine on its transatlantic voyage." He held up a shiny brown object. "It's a sea bean[5]; travelled here from tropical America. When considered in conjunction with the design of your figurine, Haiti in the Caribbean is indicated, and since figurines such as this were produced exclusively for supernatural ritual, there is no other possible explanation."

Yet it was a decidedly disturbing one. We made our way back to the beachhead and to our waiting carriage.

My misgivings on the efficacy of the prescribed rest were dispelled the next day as we travelled back to London. My companion looked well, with a high colour and cheery disposition as he buried himself in the newspaper.

"I must own", says I sheepishly, "that I receive greater benefit from such outings when accompanied by yourself, than I would ever get were I alone."

He dropped the corner of the paper and smiled. "Observation and deductive reasoning are as essential a skill for the naturalist as for the detective, as I'm sure Mr. Darwin would concur[6]. For now, though, we must put aside the former hobby and adopt the latter vocation. See here," he said, brandishing the front page. The London Post headline was 'Ripper says he will kill again!'[7] My companion lit his pipe, folded his newspaper and stared ruminatively out of the window. "The game's afoot!" he said.

Richard Birch

References:

1. The mines were then owned by Mr. Fanning Evans and 31 miners were employed, some of whom may have been Cornish émigrés; a relic from the previous owner, Captain Thomas Mitchell, who was from Cornwall.
2. Graptolites from the *Dicranograptus clingani* zone occur in the mudstones at Parys Mountain, indicating a late Ordovician (Caradocian) age, 450 million years old.
3. Pisanite $(Fe,Cu)SO_4.7H_2O$ is common at Parys Mountain. The stunning blue colour is rapidly lost on exposure to sunlight.
4. Brown long-eared bat *Plecotus aurita* is a specialist moth predator and could be the culprit. However, Natterer's bat *Myotis nattereri* may also feed in this way, and has been recorded from roosts at Parys Mountain, whereas brown long-eared has not.
5. *Entada gigas*, from Tropical America, Africa and the Caribbean. Theoretically they can float to UK shores in the Gulf Stream and the North Atlantic drift, where they get caught in a clockwise current around Ireland, and thence into the Irish Sea. They wash up fairly frequently on beaches in Cardigan Bay, and would therefore be more likely to occur on the north and west coasts of Anglesey. Their voyage "lasts on average about 14 months" (A.O. Chater pers comm.)
6. Darwin's *On the Origin of Species* was published in 1859, and its principles were long accepted by this time.
7. This headline dates the visit. The infamous "Dear Boss" letter, in which Jack the Ripper declared to the secretary of the Whitechapel Vigilance Committee that he would strike again, was received on 12th October 1889, a month after the discovery of the notorious 'Pinchin Street Torso' : an unidentified woman whose death was attributed to Jack the Ripper. Curiously, the Baker Street Detective never involved himself in the Ripper case.

New Naturalist – Brecon Beacons

Jonathan Mullard

Welsh mountain pony on Darren Cilau

Author of Gower, *the highly regarded New Naturalist about his former home patch,* ***JONATHAN MULLARD*** *has embarked on a second* New Naturalist, *this time on the Brecon Beacons. Here he describes the mountainous region which is his subject, and invites readers to contribute their own experiences of natural history in the Beacons.*

The Brecon Beacons National Park is one of Wales's most spectacular upland areas, covering over 520 square miles. The high sheep grazed moorlands, cut by a series of deep shadowy valleys, are a dramatic ice-sculpted landscape, home to ravens *Corvus corax* and buzzards *Buteo buteo* and other upland birds. Containing the highest mountains in southern Britain, the Brecon Beacon's wild and relatively unspoilt scenery is a naturalist's delight. An astonishing variety of habitats can be found in the National Park, from the exposed open moors to the gravel strewn beds of the river Usk. This variety supports thousands of species, some of which are found nowhere else on Earth. Over the next two years I will be aiming to document this rich natural heritage for my next book in the Collins *New Naturalist* series.

Upland areas are rare in southern Britain, and the Brecon Beacons form an important link between the isolated uplands of Dartmoor and Exmoor in south-west England and the more extensive uplands of Snowdonia and northern England. At the west end of the dramatic cliffs,

above Cwm Sere and Cwm Cynwyn, the Old Red Sandstone reaches its highest point in Wales at Pen y Fan, 886 metres above sea level. On the high ground there are arctic-alpine plants, usually associated with inhospitable mountain ranges like the Alps. Many of these species, including Purple saxifrage *Saxifraga oppositifolia*, Mountain avens *Dryas octopetala* and Moss campion *Silene acaulis* survive by growing in pockets of soil in cracks and crevices. Purple saxifrage is here at its most southerly point in the UK. The plants are threatened though by rising temperatures, acid rain and overgrazing by sheep. Peregrine *Falco peregrinus*, buzzard and merlin *Falco columbarius* exist alongside wheatear *Oenanthe oenanthe*, whinchat *Saxicola rubetra* and the now scarce ring ouzel *Turdus torquatus*; while ravens still occupy their long established nesting sites on the steep cliffs of Craig Cerrig-gleisiad, a National Nature Reserve.

Clinging to the rock face of Darren Fach, a Brecknock Wildlife Trust Reserve, is the rarest tree species in Britain, Ley's whitebeam *Sorbus leyana*; named after the Reverend Augustin Ley who discovered it at this site in 1896. A natural cross between rowan and Rock whitebeam *Sorbus rupicola*, or perhaps Grey-leaved whitebeam *S. porrigentiformis*, it has a total wild population of about 15 individuals, most of which are at Darren Fach. Little is known about the ecology of these rare trees, but they are very sensitive to grazing by livestock and deer. That is almost certainly why most of the existing trees are confined to the steepest land, where grazing animals are unable to reach them.

Harold E Grenfell

Mynydd Illtud

Harold E Grenfell

Buzzard

High rainfall has created a number of habitats that are dependent on a constant supply of freshwater and the uplands of the Brecon Beacons play an important role in the distribution of freshwater in South Wales. The Rivers Usk, Monnow, Nedd and Tawe all start on the upland habitats of the Beacons. The Usk is the chief river of the National Park, rising beneath Bannau Brycheiniog and flowing eastwards to cut across the mountain chain, while the north-east is drained by the Wye and the west by the Tywi. There is a wide variety of river scenery, and the wildlife includes salmon *Salmo salar*, trout *Salmo*

Jonathan Mullard

trutta, dippers *Cinclus cinclus*, kingfishers *Alcedo atthis* and otters *Lutra lutra*. Bog pools are home to a wide variety of insects, particularly Golden-ringed *Cordulegaster boltonii* and Black Darter *Sympetrum danae* dragonflies, which can be found flitting over the water in summer.

The Carmarthen Black Mountain, or Mynydd Du, the most westerly of the uplands, is an important upland site of special interest for its vegetation, open water and birdlife. Again, the area is dominated by classic glacial scenery with mounds and moraines of rock debris left by the glaciers, sometimes large enough to form a natural dam, such as that which created Llyn y Fan Fach. The lake features in one of the most well-known of the Welsh myths which describes a beautiful maiden who rose from the lake to marry a local farmer. It is also noteworthy as one of the most southerly examples of a corried lake in Britain. Growing on its sandy bed is the uncommon quillwort *Isoetes lacustris*, and there is a diverse benthic insect fauna which includes five species of stonefly.

Common and Ffridd

Over a third of the National Park is registered as common land. Grazing rights are attached to farms which surround the common, and the most important are for sheep, ponies or cattle. Hardy flocks of mountain sheep live off the rough vegetation for much of the year and this affects the variety of plants that can survive on the hills. Sadly, the number of ponies is less than it once was due to the decline of traditional hill farming, and the Welsh Mountain Pony is now classified as a rare breed. They can cope with the steepest slopes and harshest weather: unlike sheep they consume a much higher proportion of rough grasses, thereby creating a more varied vegetation profile than is possible with sheep alone.

LLangorse Lake

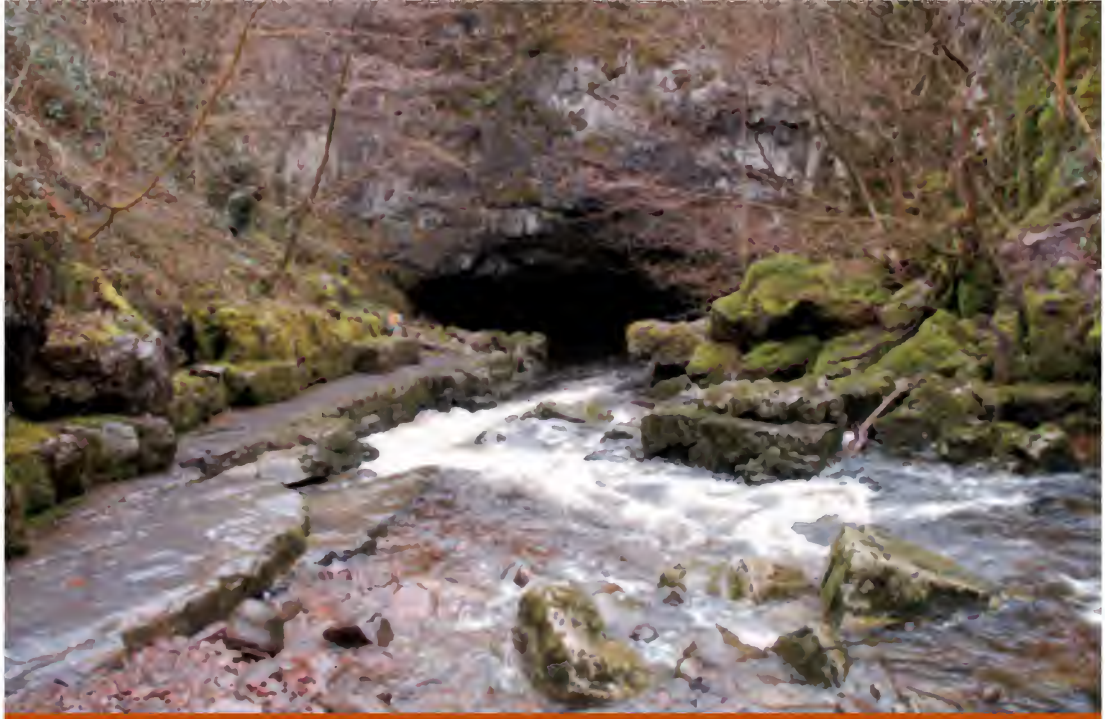
The Ffridd, the mosaic of fragmented and diverse habitats occupying the zone between fenced in-bye land of the valley bottom and the open hill land above, is a characteristic landscape at the edge of the Welsh uplands. A diverse mixture of grass and heathland with bracken, scrub (often hawthorn and gorse) or rock exposures and sometimes flushes, mires, streams and standing water, it is almost exclusively found on slopes, particularly those areas that cannot be effectively farmed due to steepness, or the frequency of rock outcrops and scree.

To the south, the moorland slopes down to a region of porous limestone pavements and a rocky terrain of rivers, waterfalls and vast underground cave systems such as the Dan-yr-Ogof showcaves, the largest system of

Harold E Grenfell

Red kite

Jonathan Mullard



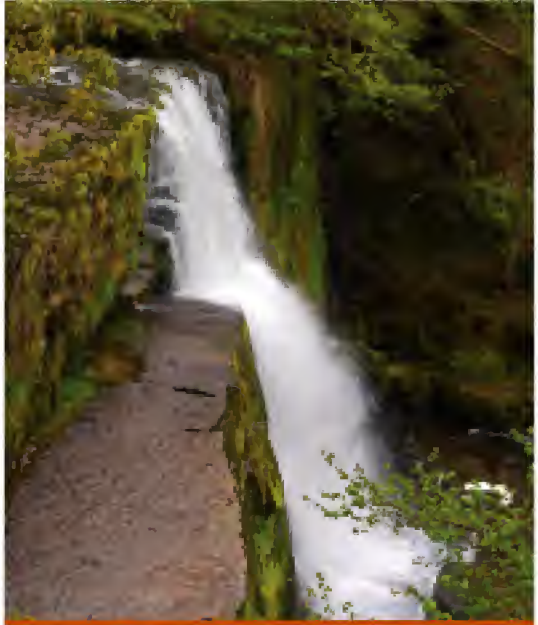
The Afon Mellte enters Porth-yr-Ogof

subterranean caverns in Western Europe. Agen Allwedd cave has some 20 miles of explored passages and is home in winter to hibernating Lesser Horseshoe bats. Porth yr Ogof cave has one of Britain's largest cave entrances, which takes in an entire river, the Afon Mellte. South of Porth yr Ogof lie the impressive waterfalls of Sgwd Clun-Gwyn, Sgwd Isaf Clun-Gwyn and Sgwd y Pannwr and, the most visited of the falls, Sgwd yr Eira. Coedydd Nedd a Mellte, the waterfalls area, was designated a Special Area of Conservation for its old sessile oak wood. Interspersed with ash and lowland woodland, the area has a huge variety of woodland plant communities, mosses and lichens. Wood fescue *Festuca altissima*, a national rarity, is present in the damp ravines along with Hay-scented buckler-fern *Dryopteris aemula*, Beech fern *Phegopteris connectilis*, Tunbridge filmy-fern *Hymenophyllum tunbrigense* and Wilson's filmy-fern *Hymenophyllum wilsonii*.

Lowland areas are characterised by grasslands, hay meadows, woodlands, and some important wetlands such as Llangorse Lake, once noted for its miraculous properties (blood-red water and groaning sounds) and a mythical lost city. A prehistoric log-boat was discovered east of the man-made island, or crannog, by Thomas Jenkins, a local carpenter, in 1925. The largest natural lake in South Wales, Llangorse is dominated by pondweeds and yellow water-lily *Nuphar lutea*. Coot *Fulica atra*, great crested grebes *Podiceps cristatus* and reed warblers *Acrocephalus scirpaceus* nest there and in winter it is visited by various species of duck. The reedbeds around the lake provide a roost for thousands of starlings *Sturnus vulgaris*.

People and nature

In my previous book in the *New Naturalist* series on Gower I attempted to bridge the gap between nature and culture; to see all the inhabitants of the peninsula, whether plant, animal or human, as part of a whole, and I began to explore the continuum of life and experience. I especially wanted to get across a sense of place and was pleased that this theme was recognised in a number of reviews. Like Stephen Jay Gould, I am moving towards the formulation of a humanistic natural history. As Gould explained "We are supposed to love nature for itself, and we are, therefore, presumably charged with the task of characterising and interpreting nature so that interested people with less expertise can learn new information and draw appropriate messages, both


Harold E Grenfell

Upper Clyngwyn Falls

factual and ethical." That might stand as a supplementary statement on the New Naturalist series.

While Gould was primarily interested in the history of how humans have learned to study and understand nature, like an increasing number of naturalists I am interested in the everyday relationships between people and nature. In this second volume, therefore, I want to extend this approach and would be interested to hear readers' experiences of natural history in the Brecon Beacons, whether these are interactions with animals, plants or places. I intend to include these in the book, together with any relevant photographs. If you have experiences that you think would be worthwhile documenting I can be contacted at **naturalist@zoho.com**

Jonathan Mullard *is a professional ecologist who has spent most of his working life in Wales. While he is currently working for the Department of Energy and Climate Change, he retains a strong interest in Welsh landscapes and wildlife and his forthcoming book on the Brecon Beacons is one of a number of publications planned on these topics over the next few years.*

References

Gould, S.J., 1998. *Leonardo's Mountain of Clams And The Diet Of Worms.* Jonathan Cape London.
Mason, E.J., 1975. *Portrait of The Brecon Beacons and Surrounding Area.* Robert Hale

Y Bannau rhwng dau glawr

Bydd disgwyl mawr am y gyfrol ar Fannau Brycheiniog yng nghyfres y 'New Naturalist' ymhen blwyddyn neu ddwy. Pa well testun – mynyddoedd uchaf de Prydain, dolydd prydferth, afonydd cyfoethog, palmentydd calch a rhai o'r systemau ogof hiraf ym Mhrydain.

Ymhlith y trysorau mae planhigion arctig alpaidd fel y tormaen porffor, sydd ar ymyl deheuol ei ddosbarthiad ym Mhrydain. Dyma hefyd gadarnle cerddinen y Darren Fach, coeden brinnaf Prydain. Llyn y Fan Fach yw'r llyn peiran mwyaf deheuol ym Mhrydain ac yn tystio i ddylanwad yr ia ar y tirlun hwn. Islaw'r copaon mae'r ffridd yn gynefin amlwg mewn mannau gyda'i gymysgedd nodweddiadol o laswelltir, gweundir, llwyni crebachlyd, nentydd a tharddellau. Mae 'na drysorau yn yr iseldir hefyd, fel y miloedd o ddrudwennod sy'n clwydo o gylch Llyn Syfaddan.

Mae afonydd pwysig fel y Wysg a'r Tawe yn tarddu o'r copaon. Ceir cyfoeth o fywyd gwyllt ar eu hyd – o'r pyllau mawn ar y tir uchel i'r nentydd byrlymus a'r dyfroedd arafach. Cynefin gwych i greaduriaid fel yr eog, glas y dorlan a'r dyfrgi.

Tra bo'r dywodfaen goch yn creu copaon mawr fel Pen y Fan mae'r calchfaen tua'r de yn creu tirwedd o balmentydd, ogofâu a rhaeadrau neu sgydau. Ceir coedwigoedd deri ac ynn yn yr hafnau llaith ac mae mwsogl a rhedyn yn tryfu'n llewyrchus yn y mannau hyn.

Mae ôl dyn mor amlwg â grymoedd eraill ar gymeriad a golwg y dirwedd hon. Dyma fro chwedloniaeth fel hanes Llyn y Fan Fach a griddfan Llyn Syfaddan. Mae olion fel crannog Llyn Syfaddan yn tystio i hen, hen anheddu yn y fro hon. Y bwriad yw i'r gyfrol hon am y Bannau fynd i'r afael â'r gwead cyfoethog hwn rhwng dyn a'r dirwedd.

Mike Alexander

Making monitoring count

Cottongrass

The National Trust is the largest landowner of important wildlife habitat in Wales, but managing this huge resource is not as straightforward as it might seem. Monitoring can be a huge help if it is tied into the practical management of the land, as ***SARAH MELLOR*** *explains.*

The National Trust (NT) owns approximately 10% of all land designated as a Site of Special Scientific Interest (SSSI) in Wales and 20,000ha of this land is additionally a Special Area for Conservation (SAC). NT has a vital role in meeting the challenging targets in the Environment Strategy for Wales of achieving favourable condition on 95% of habitats and species on our designated sites.

What exactly are we aiming for on our designated sites – what does 'favourable condition' really mean? The answer may seem obvious but it is surprising how often we only have a very general idea of what we are aiming for on these critically important sites. So our first big challenge is to develop an explicit statement of what we want for our sites and to link this, through condition monitoring, to our management activities. My post as Special Sites Project Officer, with partnership funding from CCW, aims to do just that.

Although we own all this designated land, much of it is tenanted, and this

presents a big challenge, because of the complexity of tenure and the varying levels of influence that NT as an organisation can bring to bear.

The fact that so many important sites are on common land is arguably the most difficult challenge of all. We have to work with multiple graziers and any incentives for positive management must be agreed by all. As the landowners we have very little say and all our work must be done through persuasion. Yet our commons are home to some of our most extensive and important areas of semi-natural habitat both on the coast and in the uplands.

A common under pressure

Abergwesyn Common near Rhayader is 6,677 ha of splendidly isolated upland peatlands with remnant dry heath and outstanding wet flushes, bordering the beautiful Nant Irfon NNR. The local NT team struggled to get to grips with the management of the common due to the sheer enormity of the task and its distance from their base in Brecon. In 2009, with the aid of CCW and Biffaward funding, they employed a new project officer, Jess Tyler, to start the process of engaging the graziers of the seven adjoining commons which make up Abergwesyn, with the aim of realising our dream... of what?

That was the first task, deciding what we are aiming for. What did we want the habitats on Abergwesyn Common to look like in the future? Abergwesyn encapsulates the story of much of the peatlands in the Cambrian mountains. Years of heavy sheep grazing and repeated burning mean much of the peatland habitat on the common is so terribly degraded that the odd bit of bog cotton struggling on is the only sign of the rich blanket bog vegetation this common may once have supported.

Jess and I spent a few weeks wading through a sea of energy-sapping Purple Moor-grass tussocks (it comes as no surprise that the army used this as an exercise ground to toughen up the soldiers before dropping them off in Borneo!) to discover isolated islands of marooned blanket bog vegetation. At last a glimmer of hope! In these patches we found abundant Cotton-grass, Deergrass, Sphagnum mosses, Bog Asphodel, Crowberry, Cowberry and my personal favourite, Cranberry. We established eight monitoring plots and took hundreds of individual samples, recording things such as Purple Moor-grass cover and frequency of key bog species. This provided a baseline set of monitoring data from which we would be able to assess the success of our management changes, As a result we have an idea of

Don Burgess

Cranberries

Mandy Marsh

Bog asphodel

National Trust/Ymddiriedolaeth Genedlaethol

Head Warden Joe Dagget and SSPO Sarah Mellor contemplate Purple Moor-grass on Abergwesyn

what we would like to see instead of the vast areas of Purple Moor-grass.

We still don't know whether this restoration will be possible but now we have a vision to work towards. The Abergwesyn Project has already initiated some trials to cut and collect the Purple Moor-grass to reduce the fire burden and also to see whether this provides niches for the establishment of some of the bog species.

Jess is working hard on developing this vision with our most important stakeholders, the commoners, and there are plans afoot to trial a small herd of cattle on the common but we can't say too much about that at the moment!

Tenanted land

Much of NT's land is farmed by long term tenants, which includes a lot of our SAC and SSSI land. We are committed to working with our tenants to assess how alterations in grazing affect tenanted land.

One example is a large heathland site which is part of the Seacliffs of Llŷn SAC and also the Aberdaron Coast and Bardsey Island SPA, where chough are a feature. This stunning piece of coastline is also designated as an AONB. Recent reductions in sheep grazing aimed at managing the heath have led to vigorous grass growth, making the site less suitable for foraging chough. Monitoring identified that vigorous grass growth was also in danger of swamping regenerating heather, following an accidental burn around five years ago.

The land is currently farmed by two brothers and was farmed by their family before them. I visited them with CCW to discuss the introduction of cattle or ponies on to Mynydd Craig to help with the heathland restoration. This suggestion caused some mirth as their father used to put one small riding pony out on Mynydd Craig along with the sheep in the summer during the 1970s. He subsequently received a stern letter from the NT headquarters at Queen Anne's Gate saying this pony was making a nuisance of itself to walkers and could the offending animal please be removed!

Well things have changed a little at the Trust since then! Through a Section 15 management agreement with CCW, they already graze an adjacent heathland, Mynydd Penarfynydd, with ponies and the new Section 15 agreement funded by CCW will extend this to Mynydd Craig, funding the introduction of 20 much needed cows to the site.

National Trust/Ymddiriedolaeth Genedlaethol

Gaynor Ainscough

Thrift or Sea pink *Armeria maritima*, Penmon

Cattle are not common on the coastal heaths of Llŷn, so we also hope this will provide an excellent example of how cattle can be managed on these sites.

Some of our land is let on a short term grazing licence or farm business tenancy. In these cases we have the advantage of discussing our management aspirations with potential tenants before they take on the land.

Bryn Du was recently bought by NT with CCW grant aid. It is also in the Seacliffs of Llŷn SAC and comprises an area of gorse-invaded heathland and a narrow strip of coastal grassland which is very rank and under-grazed. Species such as thyme and thrift are confined to the tops of the wonderful array of ant hills where they are not out-competed by the grasses. The anthills also provide an easy meal for choughs! This land has now been let to a local farmer on a short term tenancy which contains special clauses which will secure the restoration and future management of the site.

'In-hand' land

We have much greater control over in-hand land which is managed directly by NT property staff.

Fedw Fawr is a small piece of common land on Anglesey in the Arfordir Goleddol Penmon SSSI, a lovely piece of species-rich humid heath with Common Heather, Bell Heather and Cross-leaved Heath, Lesser Butterfly Orchids and Mountain Everlasting. The site was desperately in need of grazing but the common has no registered rights, so the rights for grazing defer to NT as the owner of the common. After an unsuccessful arrangement with another grazier, the Anglesey warden took matters into his own hands and now grazes the site with a small herd of Carneddau ponies who are building up a bit of reputation for their gorse eating skills. Once the ponies have opened up enough to keep them going, they will simply stick to these areas and graze them really hard. Monitoring revealed that the site still needed further opening up to allow associated species to flourish.

This is why the monitoring is so important. In setting up our monitoring we have to think really hard about what we actually want the habitat to look like and then how we are going to get there. With difficult sites that are in need of grazing it is very easy to feel pleased to get any grazing on them at all, but we must be careful to keep focussed on what we are trying to achieve; we must make sure it is the right kind of grazing, with the right stock, the right numbers and at the right time of year. Monitoring helps to keep us focussed and gives us some feedback when we try new things.

On Fedw Fawr we have been working with the Anglesey Grazing Animals Partnership, who have negotiated with a neighbouring landowner to add some cattle to the mix in order to provide a slightly different pattern of grazing. The cattle were on the site briefly where they quickly exposed some inadequacies in the fencing! There are plans to return them this summer.

Getting creative with grazing

The narrow coastal belt land in the St. David's SAC is

squeezed between towering cliffs and improved adjacent pasture with the coastal footpath running through it. Much of this land has been abandoned by farmers as uneconomic and not worth the hassle. The Pembrokeshire wardening team has pioneered the way in demonstrating that this land can be grazed, despite the problems, by managing their own herd of NT cattle and ponies

But managing an in-hand herd can only do so much; time is needed for animal husbandry, daily stock checks and moving stock around from site to site, not to mention the plethora of paperwork that accompanies the keeping of stock today. This puts a limit on how much grazing pressure can be applied to the land. Furthermore, the lush growth of recent years has moved the goal posts, with even more vegetation to contend with. The Welsh mountain ponies, used to a poor diet, are getting a bit overweight. This makes them very prone to laminitis, a painful and incurable disease of the hoof.

Cattle are an obvious alternative, but local farmers are unwilling to graze against unfenced cliff edges. So Area Warden Andrew Tuddenham is searching for a different solution. NT is purchasing a second herd of cattle and Andrew intends to trial a small contract for a local young farmer who will take on the day-to-day responsibility for the stock. So our coastal sites will get their grazing and once again produce food for people, farmers will re-gain experience of coastal grazing and Andrew's ponies can be deployed elsewhere. Surely a much more sustainable option!

Quick wins

Actions such as altering grazing always take their time – but there are many things which we can just get on with. Clearing non-native cotoneaster which was smothering an old quarry face at Lydstep Head near Tenby was simply a matter of finding the resources (a grant provided by the Welsh Assembly Government) and someone brave enough to do the job!

With over 150 actions identified for NT sites, we have our hands full when it comes to turning expressions of support for biodiversity into real gains for nature. The secret has been to find out what is happening on our sites, identify management goals and the priorities to get there, and then see whether the management is working. In this way, management and monitoring become two sides of the same coin.

Sarah Mellor *works as Special Sites Project Officer for the National Trust, Wales.*

Rheoli a Monitro – dwy ochr i'r un geiniog

Mae'r Ymddiriedolaeth Genedlaethol (YG) yn berchen ar 10% o diroedd dynodedig Cymru. Mae creu gweledigaeth eglur, gwneud gwaith rheolaeth ac yna mesur a gwerthuso llwyddiant yn hollbwysig os am sicrhau bod 95% o'r cynefinoedd a'r rhywogaethau ar y tiroedd hyn mewn 'cyflwr ffafriol' – sef y nod a osodir yn Strategaeth Amgylchedd Cymru. Gall fod yn anodd - rhwng amodau tenantiaeth, statws tir comin a'r angen i drafod a chydweithio gyda llawer o bobl. Ond mae gwaith da'n digwydd ym mhob rhan o Gymru; adfer cynefinoedd amrywiol ar gomin Abergwesyn mewn cydweithrediad gyda phorwyr, trafod gofalus gyda thenantiaid dan gytundebau hir sut i addasu'r dulliau rheolaeth y mae ganddynt yr hawl i benderfynu – fel ar Fynydd Craig ym Mhen Llŷn lle roedd angen ail-gyflwyno anifeiliaid trwm i'r clogwyni er lles y gweundir a'r brain coesgoch.

Mae'n haws dylanwadu ar reolaeth gyda chytundeb tenantiaeth fer oherwydd gellir llunio cymalau ac amodau i sicrhau rheolaeth gadwraethol o'r tir. Mewn ambell fan mae'r YG ei hun yn rheoli tir, fel ar Fedw Fawr ym Môn lle mae'r warden yn pori'r tir gyda merlod y Carneddau. Ac yn Sir Benfro mae gwaith yn digwydd i weld a fyddai modd pori'r rhimyn arfordirol yn economaidd gyda gwartheg, gan ei fod yn rhy noddfawr i ferlod.

Mae gwaith monitro'n ganolog i'r dasg o wneud penderfyniadau ynghylch dyfodol darnau o dir, natur y gwaith rheolaeth a'r camau sydd angen cymryd i wireddu amcanion.

Agri-environment scheme breaks up

Photo: Simon Spencer — Hay rattle, Rhoslan

Schemes like Tir Gofal, which pay farmers to maintain and increase the biodiversity of their farms, have not solved the problem of biodiversity loss, but they have been an important step in the right direction. Now all the gains may be at risk with the ending of Tir Gofal, and the introduction of a new, amalgamated two-tier scheme called Glastir. ***SIMON SPENCER*** *reports from a farm in mid-Wales.*

There is a good principle that when someone you do business with unilaterally changes the rules and does not appear to value the relationship then it is time to move on. I apply it to telephone companies, utilities, banks etc and have never regretted it. I can live with the status quo unchanged for years and am happy to tolerate poor returns or high prices through inertia. Life is short. I don't want to think about it. If they change things and want me to sign up to an inferior arrangement then I have to think about it.

A backward step

This time a letter from the Welsh Assembly Government (WAG), saying that they are changing the rules on Tir Gofal at the end of my five year agreement, triggered the familiar response. No payments for capital works, no guarantee of a transfer to Glastir or anything beyond 2013, and I was ready to hit the cancel button without even reading the several pages of text. My agreement ends in August. So be it. I certainly wasn't being offered a seamless transition to a Welsh version of Higher Level Stewardship. I would have to complete a Single Application

Mike Alexander

Curlew

Stuart Smith

Devil's bit scabious

Form and probably update my IACS again. I suspect that WAG actually wants me to leave. Sending any important form out during lambing is always a good wheeze.

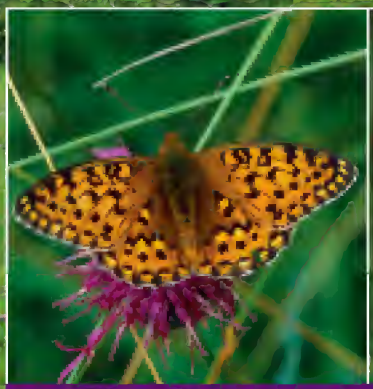
This is not just paranoia on my part. Tir Gofal farms are ones which already had valuable wildlife habitats when they joined, as they needed sufficient points to get in. They may also have created additional habitats as part of the scheme and improved what they already had. However, there are worries that the new Glastir scheme seems to be aimed at average farms without much environmental value, but whose owners are interested in creating new environmental features. The danger is that all the investment that has gone into maintaining on-farm habitats, especially easily destroyed ones like flower-rich meadows, will be lost. Is this the best WAG can do in fulfilling the EU commitment to halting biodiversity loss by 2010 – International Year of Biodiversity?

Farmers in Tir Gofal have to put up with production losses, perhaps as much as 40% yield in the case of improved fields which have been converted to unimproved, flower-rich meadows. Once the scheme ends, many will reverse the effects of the Tir Gofal prescriptions by applying fertilisers, increasing stock numbers and reclaiming fenced-off corridors to improve the financial viability of the business. It would seem an odd use of taxpayer's money (a substantial amount over 10 years) to significantly enhance the conservation value of farms, only to leave the programme unsupported at the time when the biodiversity benefits are becoming most obvious. If all farms in Tir Gofal will go into a higher level Glastir then why don't they say so and leave Tir Gofal unchanged as that higher level?

In Glastir, biodiversity becomes one of five objectives, the others being carbon management, water management, protecting the historic environment and improving access. Pages of text describe how each of these objectives will be realised, but their complexity and prescriptive nature are not encouraging. It is a model of how not to deliver real on-farm benefits for nature. Design a hugely complex scheme that no one will be able to follow, then remove all the excellent Project Officers on the ground, so that only experienced grant-chasers will bother. They will do the minimum to tick the boxes in order to get the money. It is the exact opposite of the approach which was so successful at increasing food production, and incidentally destroying much of the good habitat in Wales, when the agricultural field officers would advise on how to make the most of 'standard costs' and make a 90% drainage grant effectively free.

An oasis of wildlife

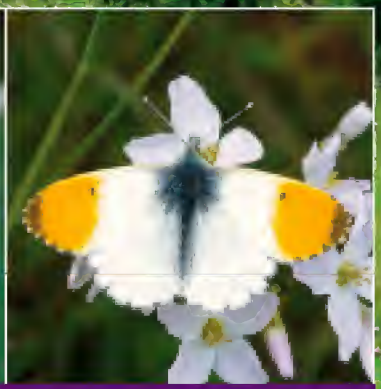
The transition from my original 'habitat scheme' was not painless but at least the money was similar. I only have 3 hectares so the sums are derisory. Last year I received £415 as a management payment but under



Jim Asher/Butterfly Conservation

Dark green fritillary

Meadow brown



Gaynor Ainscough

Orange tip

Common knapweed *Centaurea nigra*

Glastir I could expect £100 at the basic level (3 x £33.60). I have devoted much of my life to conservation and have been delighted to see my species-rich pasture improve in terms of floristic diversity. The far field is a sea of Hay Rattle *Rhinanthus minor* and the wet pasture is full of the blue flowers of Devil's-bit Scabious *Succisa pratensis* in late summer. The diversity of plant species is as good as I have seen on similar soils anywhere in Montgomeryshire. It probably could be an SSSI. Proper farmers would think it a disgrace. We have now lost over 98% of species-rich grassland in the UK.

Managing for butterflies

My own prescriptions for these fields are far stricter than Tir Gofal: they are rarely grazed before August and I go to a lot of trouble to graze them with cattle not sheep.

I have recorded 25 species of butterfly on the farm and a couple more nearby. Meadow Brown *Maniola jurtina* and Ringlet *Aphantopus hyperantus* are abundant, Wall *Lasiommata megera* and Dark Green Fritillary *Argynnis aglaja* common. Green-veined Whites *Pieris napi* and Orange Tips *Anthocaris cardamines* breed on the Cuckooflower *Cardamine pratensis*. The management of half the farm is deliberately targeted at producing lots of butterflies. Butterflies like late grazing or late hay and lots of flowers. My neighbours are in Tir Gofal and we still have curlew and yellowhammers. It is an island of biodiversity in a green desert. There seems to be little published yet on how successful Tir Gofal is at halting biodiversity loss but at least the prescriptions are on the whole positive.

I won't change the management of these fields but some of the poorer bits in terms of biodiversity will get free range pigs or poultry, despite having had government money for biodiversity for more than ten years. Farming is such an unprofitable business and even a hobby farm takes money to maintain. I am now replacing the fences I put in when I came here in the 70s. The capital works, now finished, made some contribution to restoring overgrown hedges.

A future for farming with nature?

Farming is a long term business. If I was a teenager on a Tir Gofal farm and had listened for years to a father who told me that getting paid by the government to conserve biodiversity was the way forward, I would be having doubts. Any threat to the long term

Glastir – cam yn ol?

Busnes tymor hir yw ffermio. Mi wnaiff gymryd amser maith i ddadwneud y difrod amgylcheddol a achoswyd gan y gwelliannau amaethyddol wedi'r ail-ryfel byd. Dyna pam y mae rhai yn pryderu cymaint am dranc Tir Gofal, a dyfodiad cynllun newydd Glastir.

Mae Tir Gofal wedi galluogi ffermwyr i ymdopi â chwymp mewn cynnyrch – cymaint â 40% yn achos glaswelltir sydd wedi cael ei reoli i annog blodau gwyllt. Bydd llawer yn troi nôl at chwalu gwrtaith, draenio a chynyddu stoc er mwyn sicrhau fferm hyfyw, unwaith y daw eu cytundebau i ben. Nid oes gwarant y bydd ffermydd Tir Gofal yn trosglwyddo i gynllun Glastir ac ychydig o bobl fydd yn barod i gwblhau'r gwaith papur sylweddol am daliad tila – yn enwedig y rhai sydd ond ag ychydig o dir, gan mai ar arwynebedd y seilir y taliadau newydd. Ac ni fydd swyddogion maes ar gael bellach i helpu meidrolion gyda'r cynllun gor-gymhleth hwn. Oni fyddai wedi bod yn syniad i adael ffermydd Tir Gofal ymuno â haen uwch cynllun Glastir a pharhau gyda'r trefniadau presennol?

Trist yw meddwl y gallai'r ddegawd olaf o waith cadwraeth ar ffermydd, sydd ond nawr yn dechrau dwyn ffrwyth, fynd yn ofer o ganlyniad i ddiffyg cefnogaeth Llywodraeth Cynulliad Cymru. A hynny ym mlwyddyn ryngwladol Bioamrywiaeth!

Gaynor Ainscough

Sparrows

viability of that vision would make me keener to leave or to question whether the environmental approach to farming had a future. It took a long time for post-war production incentives to change the way the land is farmed, but farmers did respond, production boomed, and the environment suffered. Now we know better and have put schemes in place to reward farmers who manage for wildlife. These schemes will take time and must be long term. Tir Gofal wasn't perfect but if it's not broke, why fix it?

Full time farmers under the age of 30 are an endangered species in Wales and this change of policy sends entirely the wrong message. Most of my neighbour's sons left years ago, they went to university and got proper jobs. The capital payments in Tir Gofal gave the few that remained a chance to earn a bit of cash in the winter and keep the rural community afloat.

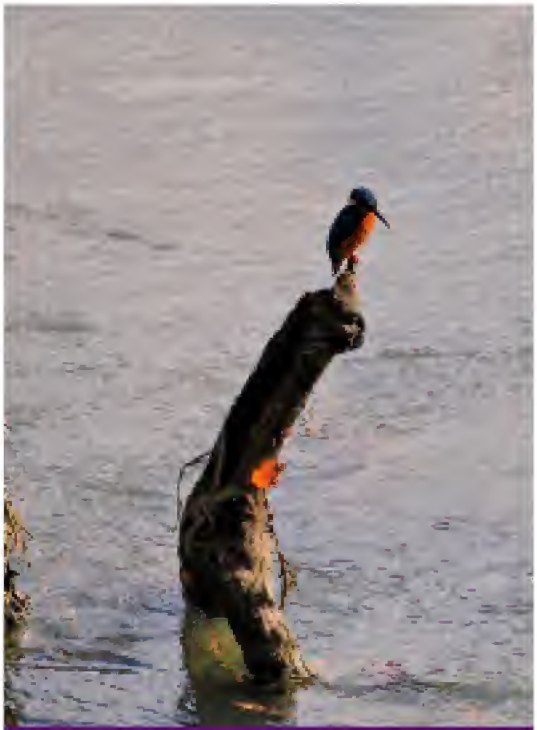
I suspect that many small holdings in Tir Gofal will give up on agri-environment schemes. For larger farms the payments, which are largely based on area, compensate for the hassle. Much of the remaining wildlife-rich agricultural land is on very small farms that missed the government grants in the 70s to drain, plough and re-seed. Glastir appears to be aimed only at the average Welsh farm, paying a small amount per hectare to do not very much. There won't even be any Project Officers for the basic level. The higher level will be by invitation and targeted at specific areas.

I fear that agricultural policy is firmly in the hands of the old guard, keen on high production farming systems, who equate biodiversity with pests. Otherwise why break up a scheme which is actually delivering for wildlife and people?

Dr Simon Spencer *(cerisyi@btinternet.com) is an ecological consultant specializing in butterflies and came to Wales in the 70s to be 'self sufficient'. He travels extensively in Europe studying butterflies and is dismayed to see how changes in farming practice, both intensification but also abandonment, are having a detrimental affect on 'high nature value farmland' and particularly butterflies throughout Europe.*

Inspired by Nature competition runner-up

The Art of Seeing Kingfishers



Arfon Thomas

Kingfisher at the Spinnies, Aberogwen

From my first footsteps I've tracked rivers. I was lured by the loop and dart of blue damselflies, the chortle of gravels and the silky sink of silt. I grew to be an avid I-Spy kid and soon ticked off most of the creatures in these pocket nature guides. But the kingfisher eluded me. As is the way with things denied, my ambition to see this fabulous bird grew and grew. It has taken me years to realise that too much intent makes them disappear.

The bird's colours and dumpy outline were tattooed on my mind a little larger than life-size. This didn't prepare me for their speed and elusiveness. A bright blur. A brilliant tease was my first experience of a kingfisher. I braked so sharply I almost went over my handlebars, over the parapet of the bridge and down into the dark waters of the Lugg. I watched, waited for a second streak; scoured the alder leaves for a gleam until my eyes lost ability to focus. I rode off, questioning that mirage like religious doubt. I yearned even more keenly for a still sighting, a good-long-look kind of sighting. I had to move to Wales and wait almost twenty years for that and then the circumstances were unlikely.

August Bank Holiday Sunday 1983 – members of The Pentecostal Church were holding a baptism in the Severn in Newtown. I walked away, upstream. As I crossed the footbridge over the Dingle brook a man touched my arm, put his finger to his lips and pointed to a hazel twig stretching over the water. Eight feet from us, a male kingfisher was preening. I gulped. Ages later I let out that breath and the bird was still working, his dagger beak zipping up barbules, oiling his sheen, completely unperturbed by us watchers or the noisy baptism. Then he plunged and surfaced. I thought he'd fly, but a few dips are part of the preening ritual. I lost track of time, thrilled by the close display of mottled turquoise, cobalt, lapis and chestnut; by his yawning and careful stretching of each wing.

Awed but not sated, I became a kingfisher addict. The mystery of iridescence deepened. From then on I had fitful sightings. Mostly, the birds flew the instant they felt my gaze on them. Even when I saw a bird land, my eye couldn't hold it for long. How could such brilliance just vanish? Sometimes the only confirmation was its white collar. Brilliance is sparked by movement. A still bird doesn't reflect much light and the extreme colour contrast acts as disruptive camouflage breaking up the bird's outline. Ground in a pestle, the kingfisher's feathers are dark brown, similar to ravens; contour feathers have a

RSPB Mike Richards

tiny turquoise spot at the tip and colourless barbules to trick the light and scatter the blue-green wavelengths. Flight illuminates the bird. The twisting and shrugging involved in preening sparks colours too.

I've seen many more kingfishers from Dolerw's banks this century. It's a bright indicator of the health of the river, but it's also down to adopting greyhounds. They are better than binoculars. Greyhounds and kingfishers share an average top speed of 43-45 mph, so I'm now trained to see speed. They've taught me much about stealth, but, more importantly, they've taught me how to see – to spot movement and interpret it later. I trace the streak and let it resolve into identification.

I've learned the sharp schree, the territorial cry too. This is a great cue to positioning. If I've missed the spark, it tells me whether the bird has flown up or downstream and gives me a chance to wait for reappearance. If the river is in flow then the dart will come along the centre, if the water's very low, as it has been for much of this year, then the birds fly under the dark knot-work of tree roots, close to the bank.

Whilst hunting, the kingfisher is very still, though to compensate for restricted movement of the eyes in their sockets, the bird tracks prey by moving its whole head. It is busy calculating the depth of fish and the angle of attack before diving at speeds of up to 60mph. Schwab and Hart[1] are fascinating on the special visual adaptations kingfishers have to meet the challenges of refraction, glare and moving prey. Kingfishers need to eat between 60 and 100% of their own weight in fish each day, so they can't afford many misses.

Greyhounds pose a very low threat to kingfishers. Occasionally, when thirsty or hot, the dogs disturb a bird, but this is when there's a black scribble of minnows writing themselves out of a favoured pool. With pollution under better control, the biggest threat to kingfishers comes from our weather. And recent years have been tough.

Floods disperse fish and sluice oily pollution making it hard to track prey. Summer floods can drown young birds still in the nest. I saw fewer birds in 2007, but just when I was despairing over the swirls and force of near bank-burst, in January 2008, my eye was caught by a female shaking her head – probably after supping. She stoked the blaze of her breast feathers as though she had a scoop of sunset in her lower mandible. And just when I thought their arch enemy, ice, was a thing of the past, we've had two harsh winters.

The Germans, who made the kingfisher their national bird for 2009, call kingfishers "Ice Birds", not for their glacier colour, but for their habit of retreating before a freeze. This year there was a shortage of ice-free places to retreat to. In 30 years of daily walking I've seen jigsaw pieces of ice at edges of the Severn, but this winter long sections were plated right across. I feared the kingfishers starved. On Valentine's Day, traditionally the 'Parliament' when birds find a mate, I saw a single bird rise from a dive. On the 19th March I was overjoyed to see three screaming and chasing each other up and down river contesting territory and mate.

Chris Kinsey

References

1. I.R. Schwab and N.S. Hart, *Halcyon Days*, in The British Journal of Ophthalmology, 5th May 2004.

Geraint George 1960-2010

Fe ddois i adnabod Geraint gyntaf ar ôl iddo gael ei apwyntio i swydd fel darlithydd ym Mhlas Tan y Bwlch. Ar ôl cyfnod hir pan na chawsai astudiaethau maes eu cyflwyno mewn cyd-destun Cymreig o gwbl, tonic oedd y cyd-ddigwyddiad hapus hwnnw pan ddaeth rhai fel Merfyn Williams (hanes diwydiannol), Twm Elias (ecoleg a llên gwerin), Peter Crew (archeoleg ymarferol) - a Geraint - ynghyd i greu'r alcemi rhyfeddol hwnnw a ddiffiniodd addysg amgylcheddol i lawer ohonom byth ers hynny. Rhoddwyd Plas Tan y Bwlch ar y map ganddynt fel canolfan astudiaethau awyr agored unigryw a dylanwadol, a mawr yw ein dyled iddynt.

Roedd popeth a gyffyrddodd Geraint yn troi'n aur - neu'n arian beth bynnag. Nid yn llythrennol yn unig - er iddo fod yn ddipyn o 'operator' pan oedd angen pres at 'Yr Achos'. Rhywsut neu'i gilydd roedd ganddo'r ddawn i ddenu arian o goffrau cyrff cyhoeddus a fyddai'n aros yn gaedig i eraill. A pha Achosion bu Geraint yn eu mabwysiadu? Wel, yn bennaf yr Achos o ddatblygu addysg amgylcheddol Gymreig a Chymraeg o'r oed cynradd i addysg trydyddol. A'r ail o'r pegynau hyn oedd ei her yn y blynyddoedd diwethaf. Addysg Amgylcheddol Gymreig (ac wrth iddo ddod yn fwy mentrus - Cymraeg) oedd y llinyn arian a redai trwy ei yrfa ddisglair fer.

Ond roeddwn i wastad yn ymwybodol o fyd rhyw Geraint arall "George" dwi'n credu y'i gelwid yn y cylch hwnnw) - y byd nad oedd y Geraint arall yma yn trafferthu siarad amdano gyda rhyw Gog meidrol colledig di-rygbi fel fi, felly mi adawaf i eraill rannu hwnnw â chi. Ond cyn prysuro ymlaen, oherwydd iddo sefyll mor gadarn mewn dau fyd, a heb gymryd ei hun yn rhy o ddifri (dywedodd unwaith mai ei brif uchelgais oedd tyfu barf fel Twm Elias!) ymddangosodd yn ddyn cig-a-gwaed i gylch ehangach o bobl nag y byddwn i a llawer o'm tebyg yn y maes amgylcheddol fyth yn ei gyrraedd. Mae'n siŵr fod y ddawn o hudo arian yn ffrwyth ei hygrededd a'i ymlyniad i'r ddau fyd hwn - a diolch iddo am hynny.

Yr oedd i'r aur ystyr trosiadol hefyd. Roedd ei weledigaeth pob amser yn amserol, yn aeddfed, yn realistig ac yn canu cloch i'r rhai mewn grym ar adeg arbennig oherwydd ei bod yn fynegiant o ddyheadau cylch ehangach o bobl. Pwy sy'n cofio "Cymdeithas Addysg Amgylchedd Gwynedd"? Wel am gybolfa o deitl ar gymdeithas, ond roeddem yn falch iawn ohoni ar y pryd. Mi ddiflannodd y gymdeithas hon nid oherwydd ei methiant ond oherwydd i'w weledigaeth symud ymlaen o Wynedd i Gymru gyfan, a chreuwyd Cymdeithas Gwaith Maes gyda'i chylchgrawn i ysgolion, a'i gwefan fyrlymus liwgar o adnoddau amgylcheddol. Mae'n dal i fynd. Sefydlodd y cylchgrawn Dan Haul ac fe gymerodd hwnnw ei le yn yr olyniaeth anrhydeddus o gyhoeddiadau Cymraeg poblogaidd a lwyddodd i ehangu apêl yr iaith i barthau a fu'n gaeedig gynt.

O'r Plas aeth Geraint ymlaen i ddysgu yn y Coleg Normal, Bangor ac wedyn, ar ei newydd wedd, i gymryd swydd darlithydd yn y Brifysgol. Buan y gwerthfawrogodd eraill ei ddoniau, a gofynnwyd iddo ymuno â chyrff llywodraethol y Cyngor Cefn Gwlad a'r Comisiwn Coedwigaeth. Gyda'r swydd-dyddiol, a'i

waith darlledu, sut yn y byd gallai ddod i ben a mwy o waith - a mwy eto? Roedd ei ymroddiad i'w amryfal swyddi yn llwyr. Roedd ei berthynas â myfyrwyr yn gynnes ac yn agos ac yr oeddent hwythau yn eu tro yn rhoi eu cant-y-cant iddo fo, ac i'r gwahoddedigion a ddeuai i gyfrannu i'r cyrsiau (dwi'n siarad o brofiad uniongyrchol yma). Llwyddodd i sefydlu cwrs unigryw a gyfunodd hyfforddiant ymarferol â dysg academaidd - a phwy ond Geraint fyddai'n llwyddo i greu cyfleoedd cyflogaeth lleol i siaradwyr Cymraeg heb elyniaethu'r rhai na feddent ar y cymwyster hwnnw. Sefydlodd ddolenni gyda gwledydd Ewrop - yn benodol gydag Iwerddon ac ardal Stamms yn Awstria. Bydd Peter, Hans, y meddylgar Werner a'i gyfaill pennaf yno, Siegfried ("Sigi"), yn gweld colled mawr ar ei ôl.

Gwyddwn yn iawn wrth gwrs mai daearyddwr oedd Geraint, arbenigwr ar y wyddor "feddal" honno nad ystyrir hi pob amser yn wyddor go iawn. Ond nid tan yn ddiweddar iawn mae'n rhaid i mi gyfaddef y sylweddolais ba mor gyffyrddus oedd Geraint ym myd caletach y daeregwr. Cafodd ei alw o bob cyfeiriad i ddehongli daeargrynfeydd neu ffrwydriadau llosgfynyddoedd ym mhob cwr o'r byd ac fe wnaeth hynny yn gelfydd, yn hwyliog ac yn ddealladwy i bawb a'i clywodd. Mi fuasai Geraint wedi bod wrth ei fodd fel daearegwr yn esbonio'r prosesau fu ar droed wrth i Eyjafjallajökull ledaenu ei fwg dros Ewrop yn ddiweddar gan sodro holl awyrennau'r cyfandir yn dynn ar y ddaear. Roedd o wedi ymweld â Gwlad yr Ia o leiaf unwaith. Mi fuasai wedi bod wrth ei fodd hefyd yn dehongli fel daearyddwr yr oblygiadau economaidd a chymdeithasol a ddeuai hefyd yn sgîl y ffrwydriad hwn. Bydd bwlch mawr ar ei ôl a chydymdeimlwn yn ddwys gyda'i deulu. Collasom pob un ohonom yn y maes hwn aelod galluog ac annwyl o'n teulu ni yn sgîl ei farwolaeth annisgwyl a disymwth.

*Bu **Duncan Brown** yn Uwch-reolwr Gwarchodfeydd gyda Chyngor Cefn Gwlad Cymru ac yn ymddiddori'n arbennig yn hanes y tirlun. Bu'n cydweithio'n agos gyda Geraint ar lawer o brosiectau, gan gynnwys Cymdeithas Gwaith Maes. Ers iddo ymddeol, bu'n canolbwyntio ar ddatblygu Prosiect Llên Natur i Gymdeithas Edward Llwyd.*

Geraint George 1960-2010

I first got to know Geraint following his appointment as a lecturer at Plas Tan y Bwlch. After a lengthy period when field studies just weren't presented in a Welsh context, that happy coincidence was a tonic, when those such as Merfyn Williams (industrial history), Twm Elias (ecology and folk literature), Peter Crew (practical archaeology) – and Geraint – came together to create that wonderful alchemy which has defined environmental education for so many of us ever since. They put Plas Tan y Bwlch on the map as a unique and influential centre for outdoor education, and our debt to them is great.

Geraint could turn anything into gold – or into pounds and coins at least – for 'The Cause'. He could obtain money from public bodies that wouldn't be available to everyone else. His great cause was developing Welsh environmental education at all levels, especially through the medium of Welsh.This was the golden thread that ran through his brief but glittering career.

But I was always aware of a world where some other Geraint lived (I believe he was called "George" in that circle) – a world this other Geraint wouldn't bother talking of with a clue-less, simple, non-rugby playing North Walian like me. Because he stood so firm within two worlds, he appeared to be a man of flesh and blood to a wider circle of people than I or many others from the environmental field will ever reach. I'm sure his ability to obtain money was the result of his credibility and his commitment to these two worlds – and I thank him for that.

There was also a metaphorical sense to the gold. His vision was always timely, mature, and realistic and rang a bell for those in power at a specific time, as it was an expression of the aspirations of a wider circle of people. Who remembers Cymdeithas Addysg Amgylchedd Gwynedd (Gwynedd Environmental Education Society)? This society disappeared, not due to its failure, but due to its vision expanding from Gwynedd to the whole of Wales. Cymdeithas Gwaith Maes (The Field Work Society) was created,

Joanna Robertson

Plas Tan y Bwlch

with its journal for schools, and its exciting, colourful website of environmental resources. The society is still going strong. The society set up the *Dan Haul* journal, expanding the appeal of the language to previously closed domains.

From the Plas, Geraint went on to teach at the Normal College, Bangor, before accepting the post of lecturer at the University. It didn't take long for others to appreciate his talents, and he was asked to join the Countryside Council and the Forestry Commission governing bodies. With his day job, and the broadcasting, how in the world could he cope with more work – and even more work on top of that? He was completely committed to his various jobs. He had a warm and close relationship with his students, and they, in turn, gave a hundred percent both to Geraint and to the guests who contributed on the courses. He managed to establish a unique course combining practical training with academic learning – and who else but Geraint could create local employment opportunities for Welsh speakers without alienating those without that ability? He established links with European countries – with Ireland and the Stamms area in Austria in particular.

We all know Geraint was a geographer, but I have to admit it wasn't until very recently I realised quite how comfortable Geraint was in the tougher world of the geologist. He was called upon from every direction to analyse earthquakes or volcanic eruptions all over the world, and he did so skilfully and cheerfully, making it intelligible to all who heard him. As a geologist, Geraint would have been delighted to explain the processes which took place as Eyjafjallajökull spread its ash cloud over Europe recently, causing all the planes on the continent to stay firmly on the ground. He had been to Iceland at least once. As a geographer, he would also have been delighted to analyse the economic and social implications caused by the eruption. He will leave a great void, and we all extend our deepest sympathies to his family. His unexpected and sudden death has meant all of us within this field have lost an intelligent and dear member of our family.

Duncan Brown

Geraint George was one of three founders of NATUR – the Welsh Institute of Countryside and Conservation Management. Co-founder Keith Jones adds the following:

NATUR would not have been able to get off the ground without Geraint George. Geraint brought with him a drive and passion which, once experienced, could never be forgotten. In the development of NATUR we all had our qualities; Geraint's was an ability to cut through to the basics, making sure that we were sticking to our brief of recognising conservation as a profession in Wales but also that Wales, its people and its qualities were recognised in our profession.

His legacy as I see it is the major contribution he has made to the development and recognition of 'cadwraeth cymreig', a Welsh way for conservation. He highlighted the inherent mutual bond which our language and culture in Wales has to the land and nature in Wales. But after all of that he was still 'Geraint' to thousands of us.

2010 – Blwyddyn bioamrywiaeth neu gyfle wedi ei golli?

Mae 2010 yn Flwyddyn Ryngwladol Bioamrywiaeth. Efallai nad oeddech wedi sylwi. Nid yw wedi bod yn uchel chwaith ar agenda'r gwleidyddion. Ond mae'n flwyddyn bwysig iawn. Addawodd Llywodraethau'r Byd, nôl yn 2001, y byddent yn atal colledion bioamrywiaeth erbyn 2010. Cymeradwywyd yr addewid gan y Cenhedloedd Unedig flwyddyn yn ddiweddarach. Nid yw'n ymddangos yn dasg anodd. Yn yr 21ain ganrif, gyda'n holl wybodaeth am bwysigrwydd bioamrywiaeth, dylem fod wedi gallu atal diflaniad rhywogaethau a chynefinoedd, heb sôn am ddechrau eu hadfer. Ond mae'r naill adroddiad ar ôl y llall yn dangos ein bod wedi methu, a hynny'n drychinebus, ar draws y byd.

Yma yng Nghymru mae'r darlun yn un tywyll iawn. Mae hyd yn oed y rhywogaethau mwyaf gwerthfawr, sydd i fod yn flaenoriaeth o safbwynt eu diogelu yn ôl y Cynlluniau Gweithredu Bioamrywiaeth, yn dal i ddiflannu. Ers dechrau proses y Cynlluniau Gweithredu Bioamrywiaeth, mae wyth rhywogaeth wedi diflannu yng Nghymru ac mae llawer mwy dan fygythiad. Mae rhywogaethau sy'n bwysig am eu bod yn cyfleu naws bro – fel y gylfinir ar y rhostir, y fwyalchen fynydd ar lethrau'r ucheldir a'r gornchwiglen yn ein dolydd – i gyd yn prinhau a byddant wedi diflannu cyn hir os bydd y patrymau presennol yn parhau. Mae cynefinoedd yn dal i grebachu hefyd. Ac yn y gwerthusiad diwethaf o gyflwr cynefinoedd Cynlluniau Gweithredu Bioamrywiaeth daeth yn amlwg nad oeddem hyd yn oed yn gwybod i ba raddau ry'n ni'n dal i'w colli.

Mae'r colledion parhaus yn golygu y bydd ein disgwyliadau'n is pan benderfynwn, yn y pen draw, i wneud rhywbeth ynglŷn â'r broblem. Bob blwyddyn mae'n bywyd gwyllt yn dlotach ac yn brinnach. Bob blwyddyn rydym yn gostwng y llinell sylfaen – a hefyd ein disgwyliadau ynglŷn â'r hyn a ddylai fod o'n cwmpas. Mae unrhyw brosiect adfer wedyn yn cychwyn o sylfaen is, ac mae unrhyw lwyddiant yn cael ei weld fel cam mawr ymlaen, hyd yn oed os nad ydym wedi cyrraedd llinell sylfaen flaenorol.

Erbyn hyn mae gan bob corff cyhoeddus yng Nghymru ddyletswydd, dan Ddeddf yr Amgylchedd Naturiol a Chymunedau Gwledig, i ddiogelu bioamrywiaeth, ond tybed a ydyw'r bobl sy'n gwneud penderfyniadau yn deall hyn? Does dim ond angen i chi edrych ar brosiectau seilwaith mawr a gwblhawyd yng Nghymru yn ddiweddar i weld bod bioamrywiaeth yn dal i ddioddef. Ystyriwch y gwaith i ledu'r A470 i'r gogledd o Ddolgellau – cynllun a olygodd dorri nifer fawr o goed ac agor llwybr llydan drwy gynefin coetir, gan ei wneud yn diriogaeth anffafriol i ystlumod, er bod y rhan hon o'r ffordd ger Ardal Cadwraeth Arbennig (ACA) sydd wedi ei dynodi'n rhannol oherwydd ei phoblogaeth o ystlumod. Gallai'r ffordd, erbyn hyn, atal ystlumod yn yr yr ACA rhag hedfan i ardaloedd bwydo yn y coetir cyfagos. Mae hyd yn oed is-adran yr amgylchedd yng Nghynulliad Cymru wedi symud i swyddfeydd newydd a adeiladwyd ar safle tir glas, ac ar orlifdir – fel rhan o ddatblygiad sydd wedi achosi prinhad yn niferoedd llygod pengrwn y dŵr, sef un o'r rhywogaethau sy'n cael ei ystyried yn 'flaenoriaeth' i'w warchod mewn Cynlluniau Bioamrywiaeth. Efallai nad yw pob datblygiad o'r fath yn drychineb ynddo'i hun, nac yn difodi poblogaethau cyfan, ond ar adeg pan y dylem fod yn atal colledion a phan fo gennym ddyletswydd gyfreithiol i warchod bioamrywiaeth, pam y mae hyn yn dal i ddigwydd? Mae pob achos o'r fath yn gostwng y llinell sylfaen ychydig bach mwy, ac yn cyfrannu at dranc poblogaeth arall.

Rhaid i 2010 fod yn drobwynt. Mae angen sicrhau ei bod yn golygu rhywbeth. Rhaid i ni fynnu bod pob awdurdod cyhoeddus yn ymwybodol o'i ddyletswyddau cyfreithiol ac yn rhoi ystyriaeth lawn i fioamrywiaeth wrth wneud penderfyniadau. Nid rhywbeth i feddwl amdano ar ôl cynllunio datblygiad ydyw; rhaid iddo fod yn un o'n ffactorau pennaf cyn gwneud unrhyw waith cynllunio. Y cwestiwn cyntaf y dylem ei ofyn yw "A fydd y datblygiad neu'r polisi hwn yn effeithio ar fioamrywiaeth?" Ni ddylai difodiant fod yn rhan o'n geirfa.

Ac wrth sôn amdanom 'ni' rwy'n eich golygu chi – darllenwyr Natur Cymru. Does neb arall yn tynnu bys, felly ein lle ni yw gweithredu. Ewch allan ac atgoffwch eich cynghorwyr, eich Aelodau Cynulliad, a'ch Aelodau Seneddol o'u dyletswyddau cyfreithiol. Heriwch hwy ynglŷn â thargedau nad ydynt wedi eu cyrraedd a chyfleoedd sydd wedi eu colli. Fel arall, y tro nesaf y cawn Flwyddyn Bioamrywiaeth, mae'n bosib mai sero fydd y llinell sylfaen.

Mick Green

2010 – Year of biodiversity or missed opportunity?

This year, 2010, is International Year of Biodiversity. You may not have noticed it, and it has not featured on any politician's radar. However, it is a very important year. 2010 is the year by which the World's Governments had pledged to halt biodiversity loss. This pledge, initiated in Europe in 2001 and endorsed by the United Nations a year later, was to halt the rate of loss of species and habitats – not to start recovery, just halt the rate of loss. It does not seem like a difficult task. In the 21st century, with all our knowledge of the importance of biodiversity, we should have been able to stop losing species and habitats. However, report after report shows we have failed, and failed badly – we are still facing losses across the globe.

Here in Wales the picture is grim. We are still losing once common species and habitats. Even our most valued species included in the Biodiversity Action Plan (BAP) process – species that are supposed to be the priority for action to conserve them – are being lost. Since the start of the BAP process, eight species have become extinct in Wales and many more are threatened. Species that are important in giving us a sense of place – curlews across our moorlands, ring ouzel in the upland crags and lapwing in our meadows – are all still declining and will soon be extinct if current trends continue. Habitats are also still being lost. In the last appraisal of the state of BAP habitats, most of our level of certainty of their state was listed as 'best guess' – not only are we continuing to lose habitats, we don't even know by how much.

The continuing losses lead ultimately to a lowering of our expectations when we finally try to do something about it. Every year our biodiversity is getting less common and less diverse. Each year we lower the baseline – lower the expectation of what should be there. Any restoration project is then starting from a lower base, and any successes are hailed as a great leap forward, even if we still haven't reached a former baseline.

All public bodies in Wales now have a duty, under the Natural Environment and Rural Communities Act, to conserve biodiversity, yet this doesn't seem to have got through to decision makers. We only have to look at recent large infrastructure projects in Wales to see how biodiversity always seems to lose out. Look at the widening of the A470 north of Dolgellau – these road works involved felling a large number of trees and opening up a wide swathe through woodland habitat, making it hostile territory for bats, and yet this section of road runs alongside a Special Area of Conservation (SAC), designated in part for its bat population. The road now potentially isolates bats within the SAC from feeding areas in the adjacent woodland. The Welsh Assembly's own environment division has just moved to new offices which were built on a greenfield site in a floodplain as part of a development that has caused declines in the local water vole population – supposedly a protected and priority species. Each such development may not be disastrous in its own right, or wipe out whole populations, but at a time when we are supposed to be halting losses and have a legal duty to conserve biodiversity, why do they still go on? Each such instance lowers the baseline a bit more, pushes another population into decline.

2010 – International Year of Biodiversity – needs to be the turning point. We need to make this year mean something. We need to make all public authorities aware of their legal duties and integrate biodiversity fully into the decision-making processes. It is not something to be thought of after a development is planned; it needs to be one of our first thoughts before any planning is done. "Will this development or policy affect biodiversity?" should be the first question. Extinction should not be in our vocabulary.

And by 'we' I mean you – the readers of *Natur Cymru*. Nobody else appears to be doing anything, so it is up to us. Get out there and remind your councillors, your AMs, your MPs, of their legal duties. Challenge them on failed targets and missed opportunities. Otherwise the next time we get round to having a Year of Biodiversity the baseline might be zero.

Mick Green

2010 Blwyddyn Rhyngwladol Bioamrywiaeth
2010 International Year of Biodiversity

Islands round-up

Ramsey (Ynys Dewi)

Ramsey Island RSPB reserve is a dramatic offshore island with some of the finest cliff scenery in Wales. Lisa Morgan reports that with the production of their own lambs, and the introduction of seven Welsh Black cattle last year, they are staying on top of the grazing. This prevents the growth of rank grass and the subsequent mat of vegetation that would follow after the summer flush. The short turf is essential for choughs to feed; eight pairs nested on the island in 2009, with an average of three young fledged per nest. Seven pairs were incubating in April this year, with another territorial pair in attendance. Wheatears also benefit from the grazed grassland and an abundance of invertebrate prey, with a record 115 pairs recorded last year (over 25% of the Pembrokeshire breeding population!).

It is becoming clear that Ramsey is a superb habitat for dung beetles and that is also good news for feeding chough. The dung of the sheep, deer, ponies and cattle present on Ramsey provides varied habitats that are attractive to many different beetles. The RSPB is working with Oxford University to investigate their abundance and diversity. Initial results are encouraging, with the number of beetles caught in each trap being far higher than the researchers expected. They already consider Ramsey to be a hugely important site for dung beetle conservation.

More dung: in late April a volunteer on Ramsey discovered an otter spraint on the harbour landing steps! This came just a few days after Crispin, their boat skipper, saw an otter enter the sea from the island on the west coast. Last year boat skippers reported otters swimming in Ramsey Sound on several occasions.

RSPB

Island cattle on Ramsey

Visiting Ramsey: although otters make their own way across, other visitors should ring Thousand Island Expeditions (01437 721686). The RSPB website also has details of combined Grassholm/Ramsey day trips (June-August).

Skomer (Ynys Dawel)

The island had 12,041 paying adult visitors in 2009, the highest ever. Seabirds had a generally productive breeding season, with guillemots, razorbills and puffins all present in increased numbers. The maximum spring count of puffins was over 13,000, the highest since annual counts began in 1988. The puffins brought in plenty of sand eels and sprats, but none of the snake pipefish brought in by many of the auks breeding in the north of Scotland. Young auks have great difficulty swallowing these, and they provide little nutrition. About 10,000 pairs of lesser black-backed gulls bred, rearing plenty of young after the previous year's almost complete failure. Apart from seabirds, visitors familiar with other Welsh islands will be impressed with the nine short-eared owl territories (19 young reared), and nine pairs of curlews (eight young reared). In contrast to the burgeoning population on Ramsey, wheatears were down to ten pairs.

How to get in the news: change your island warden! Jo Millborrow left at the end of the 2009 season, and in January a press release was published regarding the recruitment of a new warden. This generated much interest, and staff were

inundated with requests for information. Articles and interviews were provided for seven national dailies, and the Alaska Dispatch!

Visiting Skomer: day trips run daily from April 1st to end October (weather permitting). Ring Lockley Lodge 01646 636800. Residential accommodation, also see www.welshwildlife.org

Bardsey (Ynys Enlli)

A Tir Gofal agreement for Ynys Enlli between the Welsh Assembly Government and RSPB is due to be signed in 2010, one of the last Tir Gofal agreements in Wales. Glastir, the successor scheme for Wales, will operate from 1st January 2012.

The Bird and Field Observatory's Annual Report for 2008 is comprehensive and beautifully illustrated. Richard Else describes the first year of his re-survey of the Manx shearwater breeding population, due to be completed in 2010. Mandy McMath (CCW) provides a fascinating account of photo-ID of Bardsey seals. This builds on the movements of five Bardsey seals which were satellite-tagged in 2004. During the five months before the tags fell off, these individuals remained in the Irish Sea, spending around four days feeding in one location before moving on.

In 2008, seabirds on Bardsey had a very poor season. Guillemots and razorbills had very low breeding success (eight and 38 young respectively), and both lesser black-backed and herring gulls reared fewer young than usual. Last year, guillemots were up to 1016 on the ledges, the highest count ever, but only five chicks were ringed. Razorbills did rather better, with over 200 young counted.

Bardsey is also important for its breeding choughs; seven pairs reared 18 young in 2008, but only 11 young from six attempts in 2009. In both years there was a flock of about 40 non-breeders on the island until early May, and these returned in September.

Staying on Bardsey: Observatory bookings 01626 773908; other houses 08458 112233

Flat Holm (Ynys Echni)

Just five miles from Cardiff and Barry, this tiny island has a wealth of history and wildlife. Since we last reported on Flat Holm in *Natur Cymru* 9 (Winter 2003), management has continued with the northern part grazed with sheep including Texels, Badger Faced and Welsh Mountain. The southern part, with the gull colony, is lightly grazed by Soays. In 2009 the Soays produced 22 lambs; they will hopefully lamb again in 2011, generating a much needed income boost. Rabbits are also present. The breeding gull colonies (4000 pairs of lesser black-backed and 900 of herring) continue to be a significant part of the Severn Estuary Ramsar Site and Special Protection Area (SPA) designation.

Flat Holm is one of a few sites in Britain where wild leek *Allium ampeloprasum* grows, a magnificent plant topped with a large pale purple 'pompom-like' flower. This attractive plant continues to thrive on the island, with numbers in 2009 reaching 4,384. Another of Flat Holm's remarkable plants is the wild peony *Paeonia mascula*, originally introduced from Steep Holm in the 1930s; it is thought that the wild peony survives on Flat Holm due to the lack of human disturbance.

Developments since 1997 have seen the island continue its long-term aim to become self sustaining. Flat Holm already collects its own rainwater and now produces much of its own electricity through wind and solar power. Vegetables are grown within the walled garden of the farmhouse and also on raised beds, built by one of the volunteer organizations working there.

Visiting: There are approx 55 day trips and 20 residential visits for schools, youth interest groups, conservation and fishing groups each year (March - October). Day trips allow three hours on the island; visitors can also camp, or stay in the island's farmhouse. All trips depart from Cardiff Bay aboard the Lewis Alexander, taking about 50 minutes.

Further information, boat times & bookings:
www.flatholmisland.com
flatholmproject@cardiff.gov.uk
029 2087 7912

Collated by GEOFF GIBBS from information provided by Lisa Morgan (Ramsey), Jo Milborrow (Skomer), Steve Stansfield (Bardsey) and Natalie Taylor (Flat Holm)

The new endemic whitebeams of Wales

For the last ten years Tim Rich, Head of Vascular Plants at the National Museum of Wales, has been carrying out research on whitebeams (*Sorbus L., Rosaceae*) in Britain and Ireland in collaboration with the National Botanic Garden of Wales, the Royal Botanic Gardens Kew, and Bristol, Exeter and Oxford Universities. During this time the researchers have described five new trees endemic to Wales[1]. This article briefly summarises what is known about the discoveries; full details can be found in the recently published book Whitebeams, Rowans and Service Trees of Britain and Ireland[2].

Some Welsh endemic whitebeams have been known for a long time. The first of these to be found was Least Whitebeam *S. minima* which was discovered by the Rev. Augustin Ley in 1893 at Craig y cilau in Breconshire: in 2002, 772 trees were counted in three sites in the Llangattock area[3]. Shortly afterwards, Ley also discovered what was subsequently named Ley's Whitebeam *S. leyana* above the River Taf near Merthyr Tydfil – only 17 trees and saplings are known today. In 1957, E. F. Warburg described Thin-leaved Whitebeam *S. leptophylla* from two sites in the Brecon Beacons, and noted a possible third site at Craig Breidden in Montgomery.

The first of the new species, Stirton's Whitebeam *S. stirtoniana*, resulted from a study of these Craig Breidden whitebeams. A comparison of the leaves showed that the Craig Breidden trees had consistently smaller, elliptic, less toothed leaves

NMW

Llanthony whitebeam ripe fruits

than those from the Brecon Beacons, so they were named as a separate species in honour of Professor Charles Stirton for his outstanding work establishing the National Botanic Garden of Wales. We know of about 37 trees but there could be more on the precipitous cliffs.

The Llangollen Whitebeam *S. cuneifolia* is a new name for the distinct form of English Whitebeam *S. anglica* which occurs on the limestone at Eglwyseg Mountain near Llangollen. These trees are almost certainly derived from English Whitebeam but differ in having consistently narrower, more wedge-shaped leaf bases (hence the epithet *cuneifolia*). There are probably about 240 trees scattered along the escarpment with Rock Whitebeam *S. rupicola*.

Two species in the *S. porrigentiformis* group, which differ mainly in leaf shape and toothing, occur in the east of the Brecon Beacons: the Welsh Whitebeam *S. cambrensis* and the Llanthony Whitebeam S. stenophylla. The former is centred on Cwm Clydagh area, the latter in the Llanthony Valley: we do not yet have full population censuses for either species. Another puzzling member of the *S. porrigentiformis* group is apparently endemic to the Menai Strait near Bangor – at the moment its taxonomic position is unclear so it has not been formally named.

The final endemic, Motley's Whitebeam S. × *motleyi*, is a hybrid between the Ley's Whitebeam and rowan *S. aucuparia*, and was named after its discoverer Graham Motley. So far we have two saplings, neither of which has flowered. In time, if these spread, these could be named as a species in its own right. Interestingly this cross occurs frequently in cultivation too.

In total Wales now has 26 *Sorbus* taxa including four hybrids and seven introduced species, which is half of the 52 species known in Britain and Ireland as a whole. Wales is a good place for whitebeams - I wonder if we will find any more?

Tim Rich is Head of Vascular Plants at the National Museum of Wales, Cardiff.

References

1. Rich, T. C. G. & Proctor, M. C. F. (2009). Some new British and Irish *Sorbus* L. taxa (Rosaceae). *Watsonia* 27: 207-216.
2. Rich, T. C. G., Houston, L., Robertson, A. & Proctor, M. C. F. (2010). *Whitebeams, Rowans and Service Trees of Britain and Ireland. A monograph of British and Irish Sorbus* L. Botanical Society of the British Isles. London.
3. Rich, T. C. G., Motley, G. S. & Kay, Q. O. N. (2005). Population sizes of three rare Welsh endemic *Sorbus* species (Rosaceae). *Watsonia* 25: 381-388.

Global trade and climate change: new pathways and new opportunities for woodland pests

We all know that it is possible to buy virtually anything at any time of the year. Regardless of growing season, fruit and vegetables are always available on the supermarket shelves. The same is true for exotic plants, including large trees and shrubs that are moved around the world to provide the enormous variety we have become accustomed to at our local garden centres. Whilst this global trade gives us choice and unprecedented availability, it is not always appreciated that living things, especially pests and disease organisms, may also be moved along these trade routes.

These 'pathways' can harbour many pests which may cause enormous destruction here, often much greater than in their native locations. For example, the Great Spruce Bark Beetle *Dendroctonus micans*, which is a major tree-killing pest in Europe and northern Asia, was found in Wales and the English borders in the early 1980s. It soon spread and began to kill our spruce trees, endangering our main commercial forest species. We now know this arrived with imported wood and have introduced strict border controls to prevent further appearances of this and other bark beetles. Fortunately, in the case of Great Spruce Bark Beetle, we have developed biological control using a specific imported predatory beetle: natural balance has been restored!

Phytophthora ramorum, which causes a highly damaging disease often referred to as Sudden Oak Death, was identified in California in 2000, and has been found on rhododendrons in England, Scotland and Wales, and on trees especially in south-west England and Wales. It was recently found to affect Japanese larch trees in SW England, with a high level of mortality. It produces very high numbers of spores on the foliage – about five times greater than on its usual rhododendron host. Detailed surveys during 2010 will assess whether larches in Wales are also affected.

Ecological and climatic conditions faced by these pests after arrival influence their chances of survival, breeding and further spread. In the past, many potential pests simply died out because climatic conditions were unsuitable. However, climate change is tending to increase the opportunities for pest establishment, both through providing more suitable conditions and because potential host trees are increasingly stressed due to higher summer temperatures and lower rainfall.

Managing this 'double whammy' of more pests arriving and their increased survival is not easy. There is a major dilemma in allowing trade to continue but minimising the numbers of pests that move along the trade pathways. The UK is fortunate in having a sea barrier to reduce natural invasions, but we still need vigilance and measures to reduce human-assisted pest arrivals.

The Welsh Assembly Government and Forestry Commission Plant Health services work with DEFRA and the European Commission, through the Standing Committee on Plant Health, to develop and apply measures to reduce pest arrivals. In addition, the European and Mediterranean Plant Protection Organization (EPPO) works to reduce pest problems and covers Europe, Russia and neighbouring countries: the EPPO Forest Quarantine Panel recently met in Cardiff and discussed a range of pests and diseases that are on the 'not wanted' list for Europe. One of these, the Citrus Longhorn Beetle *Anoplophora chinensis* has been intercepted several times on imported maple trees from China, and is of considerable concern because it attacks a wide range of broadleaved trees and ornamental shrubs. We know it can establish in Europe because it has done so in Austria, Italy and The Netherlands, where attempts are being made to eradicate it. We believe it could also establish here.

It is important, therefore, to be aware that, despite rules to reduce pest incursions, some still get through and can have severe effects on our woodlands and gardens. Keeping pests out is the most effective strategy, but early warning of new infestations on our trees is the next step: vigilance is vital in this process!

Dr Hugh Evans
Head of Forest Research in Wales
Hugh.evans@forestry.gsi.gov.uk

Hysbysfwrdd / Noticeboard

If you would like your wildlife event to feature on these pages please contact us on 01248 387373 or email info@naturcymru.org.uk (entries may be edited). Please mention Natur Cymru if you attend any of these events.

Natur Cymru

SNOWDONIA SOCIETY TALKS
7 Sept *Not Just a Pretty Place: Survival in Snowdonia* by Huw Jenkins, Natur Cymru Marketing Manager. Non-members welcome. Plas Tan y Bwlch, Maentwrog 7.30pm. **Sarah Medcalf 01690 720 287 info@snowdonia-society.org.uk**

Canolfan Amgylcheddol / Moelyci Environmental Centre

COURSES - Booking Essential!
28-29 Jun *Heathland Ecology*
8-9 Jul *Phase 1 Habitat Survey*
11 Jul *Bee-keeping: an introduction*
12-13 Jul *Grasses: an introduction*
19-20 Jul *Sedges and Rushes*
29 Jul *Dragonflies*
9 Aug *Butterflies and Moths for beginners*
10 Aug *Dragonflies for beginners*
23-24 Aug *Phase 1 Habitat Survey*
Mid-week Volunteering Opportunities! Every Thursday - Market Garden
01248 602793 www.moelyci.org office@moelyci.org

CCGC yng Ngogledd Cymru / CCW in North Wales

Gym Gwyrdd – dyma fenter sy'n anelu at wella eich iechyd. Mae'n rhoi cyfle i unigolion ddefnyddio gym 'awyr agored'. Cyfle i ymarfer corff a gwneud gwaith cadwraethol ymarferol yr un pryd.
The Green Gym is a health initiative offering individuals the opportunity to increase physical activity through direct involvement in practical conservation activities
13 Gorff/Jul, Cors Geirch, Llŷn
15 Gorff/Jul, Niwbwrch, Ynys Môn/Newborough, Angelsey
3 Awst/Aug, Coedydd Aber, Gwynedd
18 Awst/Aug, Niwbwrch, Ynys Môn/Newborough, Angelsey
29 Medi/Sept, Hafod Garregog

Sioeau / Shows

1-10 Gorff/Jul *Gwyl Wyddoniaeth Wrecsam / Wrexham Science Festival* www.wrexhamsf.com 01978 293466 wsf@glyndwr.ac.uk
19-22 Gorff/Jul *Sioe Frenhinol Cymru / Royal Welsh Show, Builth Wells* www.rwas.co.uk 01982 553683 requests@rwas.co.uk
10-11 Awst/Aug *Sioe Môn / Anglesey Show* www.angleseyshow.org.uk 01407 720072 info@angleseyshow.org.uk
19 Awst/Aug *Sioe Fflint a Dinbych/Flint & Denbigh Show* www.denbighandflintshow.com 01352 712131
25 Awst/Aug *Sioe Sir Merion / Meirioneth County Show* www.sioesir.co.uk 01341 422837 SioeSir@aol.com

Field Studies Centres

COURSES, Wales & Borders
Dale Fort, Haverfordwest
Orielton, Pembroke
Preston Montford, Shrewsbury
Rhyd-y-creuau, Betws-y-coed
www.field-studies-council.org
0845 330 7378
enquiries@field-studies-council.org

Wales Biodiversity Partnership

CONFERENCE
15-16 Sept at Bangor University, North Wales. The Minister Jane Davidson AM will launch the consultation draft of the Natural Environment Framework. A full programme will be available soon and published on the WBP website **www.biodiversitywales.org.uk**

NATUR - Welsh Institute of Countryside & Conservation Management

20 Gorff *Trwyddedu Rhywogaethau Dan Warchodaeth Ewropeaidd a'r amgylchedd adeiledig hanesyddol.* Seminar ar y cyd ag IEEM.
20 Jul *European Protected Species licensing and the historic built environment.* Joint seminar with IEEM. Canolfan Adnoddau'r Cyfryngau/ Media Resource Centre, Llandrindod Wells. Contact NATUR for full details
www.natur.eu.com 07837 419995 events@natur.eu.com

Wildlife Trusts Wales

The Wildlife Trusts offer a huge number of events and courses all over Wales. Contact them for a full programme.
Brecknock - 01874 625 708 www.brecknockwildlifetrust.org.uk
Gwent - 01600 740600 www.gwentwildlife.org
Montgomeryshire www.montwt.co.uk 01938 555654
North Wales - 01248 351541 frankiehogan@wildlifetrustswales.org
Radnorshire - 01597 823298 www.radnorshirewildlifetrust.org.uk
South & West Wales www.welshwildlife.org 01656 726980

School of Education and Lifelong Learning, Aberystwyth

COURSES in Wildlife & Conservation
Please contact us for details
Email **learning@aber.ac.uk**
01970 621580
http://www.aber.ac.uk/sell/courses/lllearn/science/index.html

Plas Tan y Bwlch, Canolfan Astudiaethau Amgylcheddol a Gwasanaethau Addysg / Plas Tan y Bwlch Environmental Studies Centre and Education Services

COURSES
5-7 Jul *Gweledigaethau ac Amcanion ar gyfer Cadwraeth Cynefinoedd / Visions and Objectives for Habitat Conservation*
5-7 Jul *Cyflwyniad Ymarferol i Fonitro Cadwraeth mewn Cynefinoedd Afonydd / A Practical Introduction to Conservation Monitoring in River Habitats*
7-9 Jul *Sgiliau Adnabod Bioamrywiaeth ar gyfer Gweithio Gyda Plant / Biodiversity Identification Skills for Working with Children*
13-16 Jul *Gwarchod Infertebratau / Invertebrate Conservation*
19-23 Jul *Plant Identification / Adnabod Planhigion*
10-13 Aug *Llygod Dŵr / Water Voles*
6-10 Sept *Monitro Uwch i Reoli Safleoedd / Advanced Monitoring for Site Management*
7-10 Sept *Ystlumod / Bats*
Cyrsiau drwy gydol y flwyddyn, edrychwch ar ein gwefan neu foniwch am mwy o fanylion. Courses throughout the year. **01766 772600**
www.plastanybwlch.com
plas@eryri-npa.gov.uk

Diolch am y lluniau i / For illustrations, thanks to:
Emma Bowler, Mandy Marsh, Natural England, Alastair Robertson,

Back issues of *Natur Cymru* (Nos 2 - 34) are available priced £3.00

Number Rhif 27

Number Rhif 28

Number Rhif 29

Number Rhif 30

Number Rhif 31

Number Rhif 32

Number Rhif 33

Number Rhif 34

Harold E Grenfell

Cwm Clydach beech

Jim Adsher/Butterfly Conservation

Green veined white

NATUR CYMRU • NATURE OF WALES
SUMMER/HAF 2010

9 771742 374001 06

www.naturcymru.org.uk
www.natureofwales.org.uk

£4.00